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A FURNACE FOR BURNING PEA AND DUST COAL.

Perfect combustion is one of the subjects that has for a long time occupied the attention of practical and scientific men. The necessary aids to this end are carbon, so distributed as to thoroughly combine with its equivalent of oxygen, the supply of oxygen, and a temperature above the igniting point of the gases generated. The accompanying illustrations show a furnace adapted to meet these requirements, and designed to burn pea and dust coal, peat and other fine fuels. Fig. 1 is a perspective view of the furnace with a portion of the wall broken, so as to show the hopper or fuel-chamber over the arch, the passages through the skew backs in the arch, from the fuel chamber to the grate in the fire-box, the inclination of the grates from the sides to the middle of the fire, the levers and slides for regulating the amount of fuel fed to the fire, the fire-box door, used only for cleaning the fire, and the arch of fire-brick, or other refractory material. Fig. 2 is a section through the middle of the fire, showing the inclination of the arch, A, upwards, and the inclination of the grate, B, downward, from the front to rear; also the feed passages, C, for the fuel, which are at intervals from the front to the back, at the spring of the arch on both sides of the furnace. To burn this material it should be in a thin layer, and evenly distributed over the surface of the grate. This form of furnace so distributes the fuel, by a continuous automatic feed from both sides of the fire, throughout its whole length, the feed being caused simply by the law of gravity causing the fuel to fall through the feed passages and slide on the inclined grates. The radiated heat from the arch raises the gases to the temperature necessary for ignition. The benefit of this furnace, aside from the thorough combustion, is using a cheaper fuel, not at present utilized in any large quantity. A furnace of this form was erected at the Glen Cove Starch Works, Glen Cove, Long Island, in June, 1866, and upon continued trial gave such satisfaction that the boilers used in the works have recently been reset, so as to furnish steam power for the entire establishment with furnaces of the above description. For further information call upon or apply to William Ennis, President, or J. W. Cole, Secretary, at office of "The Fuel Saving Company," No. 205 Broadway, New York, who are also owners of the patents for the smokeless furnace for bituminous coal, recently illustrated in the JOURNAL OF MINING.

Fig. 1.

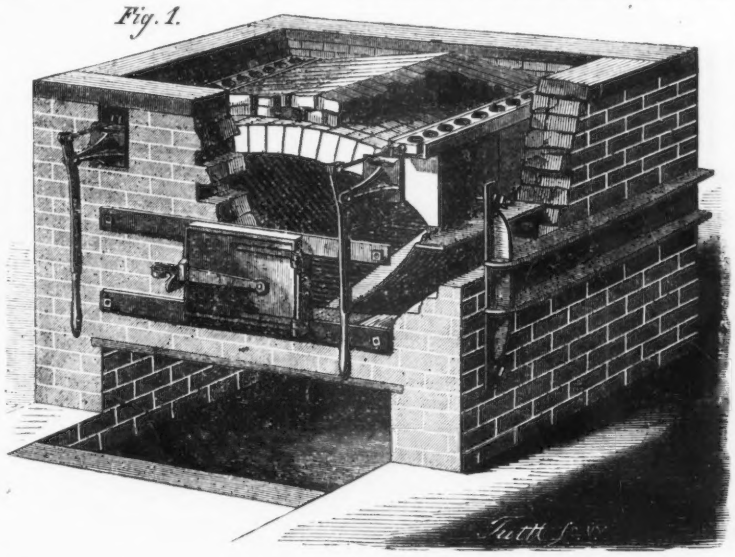
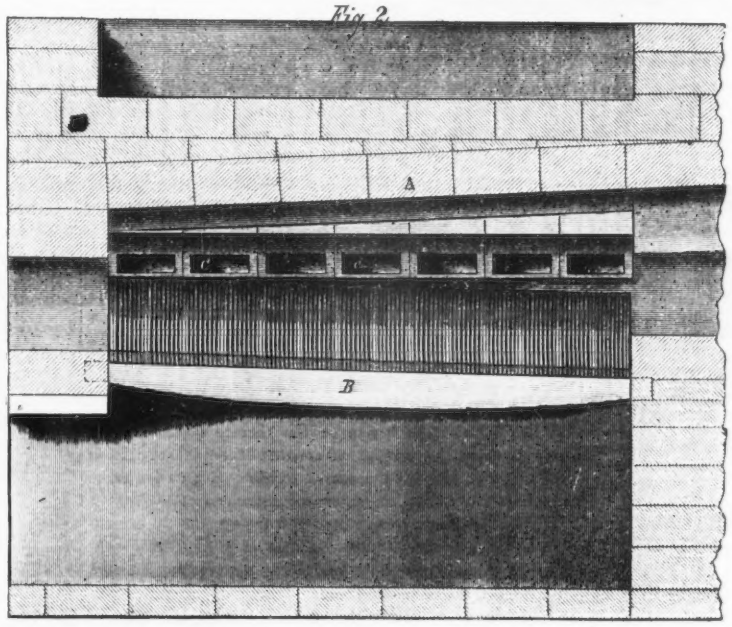


Fig. 2.



BRAUN'S BASKET GRATE FURNACE.

Lead Manufacture.

The number of establishments in this country devoted to the manufacture of the various products of lead is rather small, when compared with those in other departments of manufacturing industry. The largest of these is the Boston (Mass.) Lead Company, whose works are at Roxbury. This company was established about forty years ago. At the outset its business was comparatively small—its yearly product amounting to only 1,000 tons of lead per year. Since that time it has not only largely increased this amount, but has embarked in other departments of lead manufacture. The works of this Company are very extensive and complete in equipment, covering three acres of ground. The main building, used for the manufacture of white and sheet lead and lead pipe, is two hundred feet long, sixty feet wide, and three stories high; the corroding house is two hundred and five feet long and seventy wide; the building used for manufacturing oxide of lead and the kegs in which the lead is packed, is one hundred and forty-five feet long, sixty feet wide, and three stories high. It is a noteworthy fact that every pound of the immense quantity of lead used by this Company, during the past five years, has been imported. In view of the extensive deposits of this mineral in the Western States, it seems strange indeed that the Company should be forced to go abroad for its supply of raw material. But the yield of the Galena (Illinois) mines, which are the principal ones of the country, has largely diminished of late years. In 1842 they produced 31,353,630 pounds of pig lead, the average price of which was $2 24; in 1845 the production was 54,494,860 pounds, which sold for $2 96; the production from this forward steadily decreased up to 1865, when it amounted to only 30,125,550, which sold at $6. Since the year 1848, we have been dependent on foreign countries for the bulk of lead used in this country. In the year 1854 there was imported into New York alone nearly 60,000,000 pounds of foreign lead. Since 1848 a strong and persistent effort has been made to have pig lead placed on the free list. Not only importers of this article but manufacturers of its products, joined in the effort—the latter only asking for a duty on its products, not on the lead itself. In 1857 the duty was reduced from 20 to 15 per cent, and under the present tariff it is 2 cents per pound.—*Boston Commercial.*

Experiments with Gun-Cotton in Blasting—Trial in the Gould and Curry Mine.

By invitation of Mr. William Welch, foreman of the Gould & Curry Mining Company, and Mr. W. A. M. Van Bokkelen, agent for the Austrian Gun-cotton Company, we, day before yesterday, visited the Bonner shaft of the Gould & Curry, and descending, witnessed some interesting experiments with the new blasting material—new here. Stepping upon the cage, we descended to the fifth station, 725 feet below the surface. Here we proceeded west fifty feet, thence south 220 feet to the end of a large drift now being driven in that direction, where we found two or three workmen waiting for us, they having drilled a hole in the end of the tunnel for our use. The rock was extremely hard, and the hole was drilled in a place where the rock about it was tightly bound by the angles of the two walls. The hole was twenty-eight inches in depth and about an inch and a quarter in diameter, and was charged with six inches of gun-cotton. The report of the blast was not so loud or jarring as would have been that of even a less quantity of gunpowder, but the amount of rock displaced was quite as great as though gunpowder had been used. Now, however, we come to the great advantages to be derived from the use of the gun-cotton in blasting in the lower levels and long and badly ventilated drifts of our mines. The instant after we heard the sound of the explosion we were able to return into the drift and note the execution done, not suffering the slightest inconvenience from smoke; whereas, had the hole been charged with gunpowder, we could not have gone in until after the lapse of at least fifteen minutes, and then would have found the back part of the drift so filled with smoke that we could hardly have distinguished the body of a man at a distance of six feet. The explosion of gun-cotton produces much less heat than is produced by the same or even a much less quantity of gunpowder. This is a fact worthy of consideration to those mining in the hot and badly ventilated chambers of the lower levels of our mines. Our next blast, which was in the sixth station, 825 feet below the surface, was not a success. The hole—drilled in rock equally as hard as that in the station above—was thirty-six inches in depth, and the charge eight inches of cotton. The blast found its way out through seams and neither blew out the tamping or a single pound of rock. The tamping was drilled out and a double charge put in, and this also found its way out through seams without doing any execution; but the same thing often happens when gunpowder is used. These were the only blasts tried, and satisfied us of the great superiority of gun-cotton over gunpowder in the respects we have mentioned—freedom from smoke and heat. As to the comparative strength or rending power of the two explosives, we cannot pronounce an opinion from the two experiments we saw tried; in that respect nothing was decided. The men working in the fifth station seemed much in favor of gun-cotton, while those in the sixth appeared to look upon it as nothing more than a new-fangled species of nitro-glycerin. The gun-cotton is to be thoroughly tested, and we will have more to say of it ere long. It is being successfully used, and we understand is much liked in the Belcher mine, Gold Hill.—*Enterprise, Virginia, Nevada.*

Separating and Concentrating Ores.

One of the principal branches of industry now being followed in Storey and Lyon counties (Nevada) is sulphuret-saving; or, in other words, catching in huge reservoirs, or upon blankets laid in ordinary sluice boxes, that portion of the fine silver ores which escapes the pans and separators in the mills. During the last year in these two counties at least one hundred thousand feet of sluices have been laid, covered with blankets, and are now in active operation, with profit to those employed in the work. Very many mills have saved sulphurets (or tailings) in large bodies, and among these the Gould & Curry company, through parties holding the right, have corralled two huge reservoirs of tailings. To the lower of these we paid a visit

yesterday afternoon, to witness the first working of Paine & Stevens Separator and Concentrator, which takes the tailings in bulk and so separates the sand, quartz, lava, gravel and slum from the pure black sulphurets and quicksilver, that the tailings become valuable and easily reduced to bullion bars. The huge reservoir at which this machine is at work, contains at least two hundred thousand tuns of tailings; and if the speculation proves as profitable as the first assay indicates, it will be a fortune to holders of the patent and owners of the tailings.

A brief history of this concentrator is necessary to a full understanding of the magnitude of its importance. Sam. Stevens, a Cornish miner, at work in Grass Valley, California first conceived the idea of this sulphuret-saving machine, and built an imperfect one at a mill at which he at that time was working, which proved to work so well in saving the sulphurets from gold ore, that he, together with Thomas Paine, also of Grass Valley, set to work to perfect and enlarge the invention. Drawings were made of these men's ideas, castings moulded to suit the draughtman's work, carpenters employed to build the ideal to the real, and the first separator was erected last February, at the Star Spangled Banner mine and mill, which made its first rotation April 1st, and which in two months saved and collected fifty tuns of pure sulphurets, which was worth $150 per tun, per assay; but which sold for $85 per tun, being the amount less for amalgamating they would work. The machine was so perfect a success that Mr. William E. Dale, who was an old resident of this county, but then in Grass Valley, together with Mr. Tisdale and George R. Harned, obtained from Messrs Janin, Bonner and Parks, proprietors of the reservoir of tailings before referred to, the right to erect a Separator, with the privilege of using the tailings if the machine proved to work as well upon tailings from silver-bearing quartz as it had upon gold quartz, or even if it would pay to run the tailings through it. Accordingly, in the latter part of June, ground was broken for the machine; men were employed to put up the water-wheel to run the simple machinery, and on Wednesday last the Separator went into operation. We obtained some hint as to the affair, and yesterday visited the ground and saw the machine in active labor. We will describe it as nearly as possible: the motive power consists of a 12-feet water wheel, driven by four inches of water; by belting connected with pulleys from the wheel; other pulleys cause a horizontal shaft to revolve about seven times per minute, and to this shaft is connected the machinery. The Separator is built in the form of an arastra, being 18 feet in diameter, with a pan to hold the sulphurets obtained. This pan is of wood, 14 inches deep, and inclines from the outer edge to the center at the ratio of one inch to the foot; in the centre is an iron band, 16 inches in width, centered by the horizontal shaft. The sulphurets are supplied to this pan, through six jointed spouts attached to the shaft, from the main box that connects with the reservoir above; and these spouts continually discharge a stream of tailings—of the consistency of cream—into a groove just above the outer edge of the pan, and from which they fall below, over the pan's edge, with each revolution, causing the pouring stream of muddy silver to be distributed equally over the bottom in little waves, that float down the incline, to the centre, where the sand and lighter material is swept through the circle of the iron band and passes down the canyon. Just in advance of these jointed spouts are six wooden sweeps, swinging about six inches over the surface of the pan, to which are attached numerous floats of rubber packing which gently smoothe the angry surface of each tiny wave and persuade the lighter particles of sand and mud to float along with the water to the centre outlet, while the sulphurets, obeying the higher law of specific gravity, settle on the outer rim in a solid phalanx of aristocratic breeding. Meantime, as the sulphurets collect on the incline bottom of the pan, by aid of two transverse cones or drums, running by the aid of a belt connecting with the main gearing, a screw works with each revolution, and raises the iron drum in the center gradually, so as to preserve the exact grade from the outer edge of the pan to its center discharge. When the pan is filled, it is found that the outer portion of it, for four feet, is filled from the bottom to the top with concentrated tailings or silver sulphurets. Then the jointed spouts are turned perpendicularly to the main shafting, the sweeps detached, and the pay circle shoveled on the surrounding platform, whence, after the refuse near the centre is washed out of the pan, the same operation is gone through with, leaving only the nearly pure sulphurets in the pan. The sulphurets thus obtained are worth $100, or thereabout, per tun. The Separator will work, it is calculated, 50 tuns per day of the tailings, of which, will be saved six tuns of concentrations that will be worked in pans, and amalgamated after the usual style of working silver ores. Blankets in sluices concentrate tailings slowly, with much sand, lava, quartz, etc., in the saved mass. This Separator concentrates tailings only. Blankets save only a portion of the passing silver, as the next set below is almost as good. This machine saves everything in the tailings, and another machine below would not catch a color. An ordinary set of blankets costs as much money as does a Separator, and it requires more force to run them. In fact, the Separator, apparently, has every advantage. Three more of these machines are to be erected as soon as this one has been thoroughly tested, and we can sincerely congratulate all parties concerned upon the evident success of the one in operation, as conducive to the general wealth of the patentees and the people at large in Nevada, where silver mines are the ruling feature of prosperity.—*Virginia city (Nevada) Trespass.*

The Separation of Tin and Arsenic.

Professor Wohler describes a process for separating tin and arsenic, based upon the solubility of sulphide of arsenic in bisulphite of potash, which does not dissolve sulphite of tin. The mass, oxydized by nitric acid, is allowed to digest with sulphur and caustic potash till solution is complete, or till the formation of a metallic oxysulphide, which is separated by filtration. The liquid, treated by excess of sulphurous acid, is allowed to rest for some time, and is then evaporated till two-thirds of the water and all the sulphurous acid have gone off. Filter off the sulphide of tin and wash it, not with water, which must not be used here, but with a concentrated solution of chloride of sodium. This may be removed from the precipitate by means of a slightly acid solution of acetate of ammonia, but the liquor so obtained must not be added to the washing waters charged with salt. The sulphide of tin, when dried, may be converted into oxide of tin by roating in contact with air. The arsenic which the liquid contains in the state of arsenious acid may be precipitated by a current of sulphuretted hydrogen.

Original Papers.

IDEAL CHEMISTRY.*

On Thursday next the Fellows of the Chemical Society will assemble at Burlington House to hear a lecture by Sir Benjamin Brodie on the new Chemical Calculus. The subject is, perhaps, the most abstruse which has ever been brought before the Society, and it has, therefore, been considered advisable for us to give in the present number a slight outline of the methods of reasoning adopted by the learned author, as set forth in the paper† which has just appeared in the *Philosophical Transactions*.

The memoir, of which the first part is the subject of this article, will mark a new epoch in that branch of chemical science which relates to the symbolic expression of facts. The complete paper is not yet published. The present part, which was read before the Royal Society on May 3, 1866, when it attracted the liveliest attention, and some little discussion from the chemists present, relates to the construction of chemical symbols. In the second part the author proposes to treat of the theory of chemical equations, which is intimately connected with the general processes of chemical reasoning, and especially with the consideration of the nature of that event which is termed a chemical change, of which a new analysis will be given founded on its symbolic expression. In the third part it is intended to consider the principles of symbolic classification, and the light thrown by this method upon the origin and nature of the numerical laws which limit the distribution of weight in chemical change.

The author mainly confines himself at present to the discovery of a system of symbolic expressions by which the composition of the units of weight of chemical substances may be accurately represented, and which may hereafter be employed for the purposes of chemical reasoning. This problem is of a perfectly real nature, admitting, where the experimental data are adequately supplied, of only one solution; and the discussion of this question involves the consideration of the fundamental principles of symbolic expression in chemistry.

In the first section, considerable attention is devoted to the definitions, and the various terms used have definite significations attached to them. "Ponderable matter" and "a chemical substance" require no explanation, but the expression "a weight" is used in a special sense. In this discussion every chemical substance, simple or compound, is exclusively regarded as a *weight* of matter. Its form, condition, or state is disregarded, and the only property with which the chemist has here to do is the transformation of the weights of matter, and the laws of the composition and resolution of these weights. The term *a weight* is used, therefore, in a concrete sense, as when we speak of "a box of weights," and call one of the pieces of metal in the box "*a weight*" of platinum or brass. In just this sense, Sir Benjamin Brodie speaks of *a weight* of water, of oxygen, of sulphur, etc., excluding all other forces but that of gravitation.

A "single weight" is a weight of any portion of matter regarded as one object. The matter making up this weight may be simple or compound, and, if the latter, chemically combined or not. So long as it is considered as one object, it is a single weight.

A "group of weights" is constituted of any number of single weights.

Between two portions of ponderable matter (two "weights") there may be *equality* and *identity* as regards weight. These terms require fuller explanation. Take a *weight* of water—a gramme, for instance—and apply heat to it; it increases in bulk; it becomes a gas; and at a still further elevation of temperature it is resolved into its components, oxygen and hydrogen. But throughout all these profound physical and chemical changes, its action on the balance does not vary. Now, there is the relation of *equality* of weight between a gramme of water and a gramme of oxy-hydrogen gas, as there is between a gramme of water and a gramme of lead. But the gramme of water is connected with the gramme of its component gases by another relation, that of continuity of existence, or *identity*, which does not exist between the gramme of water and the gramme of lead.

A compound weight is here defined as a single weight of which the whole is identical with two or more weights. Such weights are termed the components of the compound weight, which is said to be composed of them. A "simple weight" is a weight which is not compound—that is, which has only one component.

It is necessary to select a "unit of ponderable matter" which may serve as the common measure of those chemical properties which it is desired to investigate, and in this investigation the "unit" is defined as that portion of gaseous ponderable matter which occupies the volume of 1000 c.c. at 0° C., and a pressure of 760 m. m. of mercury. This volume is called the "unit of space," and the weight of a unit of hydrogen is selected as the standard. The weights of other units of matter can therefore be expressed absolutely in grammes, or relatively in reference to the standard unit of hydrogen.

When a compound weight (*e. g.*, a weight of water) is resolved into its component weights (*e. g.*, a weight of oxygen and a weight of hydrogen), the weight is said to be "distributed." The same expression is used in reference to the converse operation of synthesis. The meaning of the term "undistributed weight" follows from the above. A distributed weight is necessarily a compound weight, and an undistributed weight must be regarded, in respect to the events under consideration, as simple, although under other circumstances it might prove to be a compound weight.

A chemical operation is defined as an operation performed on the unit of space of which the result is *a weight*. These chemical operations are represented by symbols, $x, y \ldots$ The symbol $+$ is the symbol of the operation by which one weight is added to another to constitute with it one group. The symbol $-$ represents the removal of a weight from a group of weights. The symbol $=$ is the symbol of identity. The symbol $x+y$ represents a group constituted of the two weights, A and B; $x+x$ or $2x$, is the symbol of two weights, A; and $x-y$ is the symbol of the weight A without the weight B. The symbol 0 is the symbol of a group in which no weight appears, and which has had its origin in the several performances of the operations x and $-x$, so that $x-x=0$, and $0+x=x$. The symbols $+$, $-$, and $=$ are here used in a sense analogous to their arithmetical meaning. No uniform interpretation has hitherto been attached to them in chemistry.

But the most important feature of the method is the introduction of the symbol xy as the symbol of a compound weight, of which two portions of matter, say A and B are the component weights. This symbol indicates that we are to perform the operation y upon the unit of space, and then to perform successively upon the *same* unit the operation x, in which respect it differs from the symbol $x+y$, which indicates that the operations are to be performed upon distinct units, the results being different, according as the operations are performed *successively, jointly, severally,* or *collectively*. The symbol xy is the symbol of the *successive* operations x and y; (xy) represents their *joint* operations; $x+y$ represents them operating *severally;* and $(x+y)$ represents the same operations operating collectively. We can thus express with accuracy the various ways in which we conceive of the existence of the same ponderable matter.

The symbol 1 is necessarily contained as a common factor in every chemical symbol, and is the symbol of the common subject of operation, the unit of space. But the unit of space, as above explained, is space without weight, and the symbol 1 is therefore the symbol of "no weight." It is therefore inferred that $0=1$. This equation may at first sight appear paradoxical; it need not, however, be a matter of surprise that in the chemical calculus we should have two symbols for "no weight," since in that system the same ponderable matter may be denoted by xy and $x+y$. These different symbols are necessary, as representing the different ways the "weight", or the "no weight" has been obtained. Similarly, the symbol ∞ is to be interpreted as the symbol of the ponderable universe regarded as a whole, and the symbols 1 and ∞ represent in the calculus of chemistry the limits between which the values of all other symbols are comprised.

Now, according to the definition given of chemical identity, two weights are said to be identical which consist of the same weights; hence the weight (or matter) of which xy is the symbol is identical with the weight (or matter) of which $x+y$ is the symbol: and

$$xy=x+y.$$

This equation is the fundamental equation of the Calculus, and from it the properties of the symbols are derived.

After a discussion of the fundamental chemical equations, the symbols of simple weights (which are termed prime factors), and the construction of chemical equations from the data afforded by experiment, the author proceeds to the symbols of the units of chemical substances. One hypothesis is assumed, and that is that the unit of hydrogen is a simple weight. The symbol of this "weight" is expressed by the letter a. The absolute weight of the portion of ponderable matter thus symbolized—that is to say, of 1,000 c.c. of hydrogen at c° C. and 760 m.m. pressure—is 0·389 gm. This is identical with the "crith" of Dr. Hofmann. It is subsequently shown that the units of the elements mercury, zinc, cadmium, and tin, may be symbolized in an equally simple manner. The author employs letters of the Greek alphabet as symbols of simple weights. Speaking of this, he says, "It is a mistake to confuse the objects of a symbolic system with those of a 'memoria technica,' and I am inclined to believe that a purely accidental distribution of letters among the weights to be expressed would be the best. In the selection here made, however, I have not proceeded rigidly upon this principle, a certain reminiscence of the name being retained in the symbol, as for example ξ οξυς, the θ of θειον, the χ of χλωρος, and the δ of ὑδραργυρος. Facility of writing and reading the symbols is, however, far more important than any aid to memory which can be thus afforded, and these points are to be mainly considered. The unit of hydrogen, which occupies a peculiar position as the 'modulus' of the system, is indicated by a special symbol, a."

It is known by experiment that 2 units of water can be decomposed into 2 units of hydrogen and 1 unit of oxygen Now, let

$\alpha^{m}\beta^{n}\gamma^{o}$=symbol of the unit of water,

* From the London Chemical News, August 2, 1867.

† "The Calculus of Chemical Operations; being a Method for the Investigation, by means of Symbols, of the Laws of the Distribution of Weight in Chemical Change." by Sir Benjamin C. Brodie, Bart., F.R.S., Professor of Chemistry in the University of Oxford.

a =symbol of the unit of hydrogen,
$a^{n}\xi^{n1}$ =symbol of the unit of oxygen,

where a and ξ are the symbols of simple weights, and m, m_1, n. n_1 positive integers. Then

$$2a^{m}\xi^{m1}=2a+a^{n}\xi^{n1},$$

To this is attached the condition that

$$w(a)=1,$$
$$m+m_1\,w(\xi)=9;$$

from the fundamental equation

$$(a_{m}\xi^{m1})=a^{n}a^{n}\xi^{n1},$$

whence

$$2m=2+n \text{ and } 2m_1=n_1.$$

Selecting from the possible solutions of these equations the minimum solution as both necessary and sufficient to satisfy the condition of the equation, we have

$$m=1,\quad n=0,$$
$$m_1=1,\quad n_1=2$$

which give

Symbol of water, $a\xi$;
Symbol of oxygen, ξ^2;

the relative weights corresponding to the prime factors a and ξ are

$$w(a)=1,$$
$$w(\xi)=8,$$

the equation being thus expressed:

$$2a\xi=2a+\xi^2.$$

The following table is given of the combinations of the prime factors a and ξ:

Name of Substance.	Prime Factors.	Absolute weight in grammes.	Relative Weight.
	a	0·089	1
	ξ	0·715	8
	Symbol.		
Hydrogen	a	0·089	1
Oxygen	ξ^2	1·430	16
Water	$a\xi$	0·805	9
Peroxide of hydrogen	$a\xi^2$	1·520	17

By a similar process of reasoning, starting from the ascertained facts that the density of sulphur vapor is 32, that of hydrogen being 1, and that the ponderable matter of 2 units of hydrogen is identical with the ponderable matter of 2 units of hydrogen and 1 unit of sulphur, it is shown that the symbol of sulphur is θ^2, and that of sulphuretted hydrogen $a\theta$. The symbol of sulphuric acid $a\theta\xi^4$, and that of pentathionic acid $a\theta^5\xi^8$. Similarly, selenium is symbolized as χ^2, seleniuretted hydrogen becoming $a\chi$.

In the case of chlorine, which may be taken as the representative of another group of elements, it is ascertained that 2 volumes of hydrochloric acid can be decomposed into 1 volume of hydrochloric acid and 1 volume of chlorine.

Hence, putting $a^{m}\chi^{m1}$ as the symbol of the unit of hydrochloric acid, and $a^{n}\chi^{n1}$ as the symbol of the unit of chlorine,

$$2a^{m}\chi^{m1}=a+a^{n}\chi^{n1},$$

and

$$(a^{m}\chi^{m1})^2=a^{n}\chi^{n1};$$

whence

$$2m=1+n$$
$$2m_1=n_1.$$

and

$$m=1,\quad m^1=1$$
$$n=1,\quad n_1=2,$$

a minimum.

Since the density of hydrochloric acid is 18·25, we have to determine the absolute weight of the simple weight χ,

$$m+m_1w(\chi)=18·25,$$

whence

$$w(\chi)=17·25,$$

which gives the

Symbol of hydrochloric acid....$a\chi$.
Symbol of chlorine.....$a\chi^2$.

We can only briefly allude to the discussion of the symbols of carbon, silicon and boron. Owing to the impossibility of ascertaining the vapor densities of these elements by direct experiment, their symbols cannot be determined in an analogous manner to those of the preceding elements: but inasmuch as we are able to construct numerous chemical equations which connect the vapor densities, we are able to determine from these, within certain limits, the symbols of the elements themselves.

From such data as these it is rendered very probable that the symbols of carbon, silicon, and boron are respectively of the terms

$$s\theta,\sigma^{r},(a\beta^2)^{\theta}.$$

In the case of the elements antimony, bismuth, tin, zinc, cadmium and silver, different principles of investigation have to be adopted, and their symbols are given according to two or more hypotheses.

The following table of the symbols of the units of certain well-known substances affords sufficient illustration of the method pursued:

Symbol of iodine	$a\alpha^2$
" " bromine	$a\beta^2$
" " nitrogen	$a\iota^2$
" " phosphorus	$a^2\rho^4$
" " arsenic	$a^2\rho^4$
" " chloric acid	$a\chi^3$
" " ammonia	$a^2\iota$
" " chloride of ammonium	$a^3\iota\chi$
" " phosphide of hydrogen	$a^3\rho$
" " oxychloride of phosphorus	$a^2\phi^3\chi^3$
" " acetylene	$a\kappa^2$
" " alcohol	$a^3\kappa^2\varepsilon$
" " hydrocyanic acid	$a\varepsilon\pi$
" " cyanogen	$a^2\iota^2$

We quote the following from the concluding remarks of the author:

"Our conclusions on this point are so remarkable, and so contrary to anticipation, that doubtless we could never trust them but for the simple and exact process by which they are deduced. Now, the conceptions which we form of the nature of the elemental bodies constitute the fundamental theory of the science, for these conceptions comprise and determine every similar conception. The unit of the element hydrogen is here conceived of as a simple weight, and symbolized by the letter a. That, to say the least, this view may be permitted, is proved by constructing the symbols of chemical substances upon this hypothesis. There are, however, certain exceptions, be they real or apparent, in which this mode of expression is impossible." . . . "The unit of the element mercury, and the units of several other metals, such as zinc, cadmium and tin, so far as our imperfect experience extends appear to be analogous in this respect to hydrogen. But these are the only elements of this simple composition. The units of a second group of which the element oxygen, symbolized as ξ^2, may be taken as a type, and to which belong sulphur, $t\theta^2$, and selenium γ^2, are composed of two identical simple weights, and the facts of the science do not permit us to assume these units as otherwise composed. Lastly, another group of elements appears in this system of a different and more complex composition, to which group belong the elements chlorine $a\chi^2$, bromine $a\beta^2$, iodine $a\alpha^2$, nitrogen $a\iota^2$, phosphorus $(a\phi^2)^2$, arsenic $(a\rho^2)^2$, and, in all probability, numerous other elements. The simplest view which, consistently with the fundamental hypothesis, can be taken of the composition of these elements, regard being had to the total system of chemical combinations, is that they are severally composed of a unit of hydrogen and of two identical simple weights—as, for example, in the case of chlorine, of the simple weight a and two of the simple weights symbolized as χ, so that the elements of this group are to be considered as combinations of elements of the two previous forms respectively."

The author concludes by saying that from these and other equations "we unavoidably have suggested to us as the ultimate origin of our actual system of combinations . . . a group of elements, $\xi, \theta, \chi, \beta, \omega, \nu, \ldots$ of the densities indicated by these symbols, and which. . . . we cannot but surmise, may some day become, or may in the past have been, 'isolated and independent existences.' Examples of these simple monad forms of material being are preserved to us in such elements as hydrogen and mercury, which appear in the chemical system, as records suggestive of a state of things different from that which actually prevails, but which has passed away, and which we are unable to restore."

"Such a hypothesis is not precluded to us, but nevertheless we are not to imagine that it is a necessary inference from the facts. So far as the principles or conclusions of this method are concerned, the 'simple weights' $\xi, \theta, \chi, \beta, \omega, \nu, \varphi \ldots$ may be treated purely as 'ideal' existences created and called into being to satisfy the demands of the intellect, to enable us to reason and to think in reference to chemical phenomena, but destined to vanish from the scene when their purpose has been served; and the existence of which, as external realities, we neither assume nor deny."

Mining Summary.

GOLD AND SILVER.

California.

The San Francisco *Mercantile Gazette*, of July 29, has the following on "Home Finances:" There is a continued accumulation of capital on this coast, and, consequently, a tendency to lower rates of interest. This tendency has been increased by reason of the circumstance to which we called attention in our last issue, viz., the attempt to raise the rates of labor. This has caused a general suspension of enterprises requiring labor, and has also induced some manufacturers to suspend work, under the impression that they can import cheaper than they can manufacture. The effect is to increase the supply of loanable capital, and ultimately to promote a larger demand for bullion for remittance. At this time the demand for the purpose keeps the premium of bars some three quarters per cent. above the mint value, which is thus: a bar of say 200 ounces 900 fine, has a stamped value of $3,720 92. That bar sent to the mint will realize:

Standard value		$3,720 92
Additional silver		24 30
Total		$3,745 22
EXPENSE.		
Refining, eleven cents per ounce	$22 00	
Coinage one half per cent	18 60	
Interest five days at one per cent	6 24—	46 48
Total yield		$3,698 38

The same bar, 900 fine, sold at the market rate, 920, will realize $3,720 92, with $7 44 premium, less $4 55 assay charges, making $3,720 71, or an apparent loss of $25 33 by coinage, of which loss $6 is overcharge for refining, and $18 60 is the coinage charge, say $24: attending which there is a loss of $3 24 for delay and interest, making $27 24. But for this tax upon coinage, a much larger proportion of bullion would reach the mint. That is to say, the amount realized in coin for gold bars would be more than it is now. The supply of bullion for the last quarter, and for the six months of the year, has been less than for some former periods. The quantity of bullion brought down by Wells, Fargo & Co. does not represent the whole supply, since a good deal comes down in private hands. To trace the whole amount received, we have to find the amount officially reported at the mint for coinage and that at the custom-house for export. All the bullion that comes down finds its way to these two outlets, and it is found the amounts so reported exceeds the sums brought down by Wells, Fargo & Co. by about 13 per cent. In illustration, we call attention to the following table, showing the receipts by Wells, Fargo & Co.:

From	1st Quarter.	2d Quarter.	Total Jan. 1. to Jan. 1.
Nevada	$4,199,949	$5,142,099	$9,341,949
Southern mines	3,838,911	2,756,615	6,947,527
Coastwise	801,488	1,091,120	1,892,608
Total receipts	$9 487,883	$12,914,159	$22 402,042
Total exports	9 839,647	10,926,544	20 766,191

In the first quarter the quantity exported exceeded the apparent supply, and the supply from Nevada exceeded that from the Northern mines. In the second quarter there has been an apparent excess of supply, and the Northern mines have delivered more than Nevada. From all sections the receipts were larger when the roads in the interior became good in the second quarter. All the bullion which comes down finds a vent either at the mint or through the custom-house. The quantity so accounted for in the last two quarters have been as follows:

Gold.	1st Quarter.	2d Quarter.	Total.
At Mint	$1,985,387 00	$5,470,220	$7,615,962
Steamer export	4,324,122 00	5,288,418	9,612 540
Sail export	144,043 00	203,351	348,194
Silver.			
Steamer export	3,276,533 58	2 177,319	5,453 852
Sail export	790 472 55	1,729,633	2,520,155
Total export	$10 521,158 15	$14,878 291	$28 548,403
Receipts	9 478,88[illegible] 00	12,914,159	22,402 042
Excess exports	$1,042,275 15	$1,964,132	$3,146,361

Thus we have the fact that in the first quarter of the year the mint and export demand took $1,042,265 more than the apparent receipts. In the second quarter, the same cents took $1,964,132 more than the apparent receipts, making for the six months $3,146,132 more than the apparent supply. This surplus is that portion of the mining product which reaches the city in private hands, and is not therefore embraced in the sums reported by Wells, Fargo & Co. The proportion so furnished was, it appears, nearly 11 per cent. in the first quarter, when the inclemency of the weather is a bar to travelling. In the second quarter, the private supply was 13¼ per cent. of the whole reported receipts, and for the six months, the proportion was 12·30 per cent. more accounted for than Wells, Fargo & Co. report. Now, if we take three successive periods of six months, we shall have results as follows:

1866.	Minted.	Exported.	Total.	Reported Receipts.
First six months	$6,902,518	$17,887,981	$24,790,499	$21,408,343
Second six months	10,459,482	15,625,503	26,084,985	23,495,811
1867.				
First six months	7,613 662	17,934,741	25,548 603	22 102,291
Total	$24,975 662	$51,448,225	$76,421,887	$67,007,445
Exports over receipts, 14·3 per cent				9,524,442

The three periods show proportionate individual receipts as follows:

	Receipts.	Minted and Exported.	Excess.	Per Cent.
First six months of 1866	$21,408,343	$24,790,499	2,382,186	10·00
Second six months of 1866	23,495 811	26,084,985	2,589 174	11 00
First six months of 1867	22 402,041	25,548,403	3,146,361	13 00
Total	$66 756,765	$76,421,887	$9,334,442	13.10

Thus the proportion brought down by individuals varies at different seasons, but the general average for eighteen months is 13·10 per cent. of the reported amount brought down. The amount seems to run with more or less regularity, being 13½ per cent. in the first six months of the present year. The exports of treasure from July 1st to date have been as follows:

July 3—Per Colorado,		
To Hong Kong		$681 391 80
To Yokohama		7,100 00
		$688,491 80
July 5—Per White Swallow to Hong Kong		253 265 30
July 9—Per Sacramento,		
To New York	$1 231,478 92	
To France	81,551 64	
To England	16,677 99	
To Panama	5,000 00	
		1,573,688 55
July 19—per Golden Age.		
To New York	$589,144 28	
To France	177,230 00	
To England	118,480 33	
To Panama	20,060 00	
To Punta Arenas	3,000 00	
		907 824 61
July 27—Per Rattle		805,421 53
Total since July 1, 1867		4,188,644 88
Previously this year		20,816,191 57
Total since January 1, 1867		25 004,863 45
Corresponding period of 1866		26 461,151 39
Decrease this year		$1 456 287 94

Tuolumne County.—The San Francisco *Commercial Herald and Market Review*, a new and excellent paper, of which Channing Beals, Esq., is editor, learns from a statement made by the Golden Rule Mining company, for the fiscal year ending July 1, 1867, that 4,099 tons of ore were reduced, aggregating a return of $36,653 97 in bullion, and showing an average yield of $8 94 to the ton. The total expense per ton of ore reduced amounted to $6 39, leaving a net profit of $2 55 per ton. Five dividends of $1,500 each, or fifty cents per share on 3,000 shares, have been paid to stockholders during the last twelve months. Cash on hand July 1, 1867, $2,953 07.

Calaveras County.—The San Andreas *Register*, of July 13th, has the following: Thorn & Co.'s mine is giving out the gold merrily. In sinking their shaft to its present depth, fifty feet, the company have picket out over $2,000 in nuggets of different sizes, from a pin's head to a hen's egg. All the dirt and rock from the shaft is to be handled and worked yet, and it is confidently expected that argosies of wealth will be found therein. .... Since the above was written, over $300 was picked up in one day by the workmen in boulders of rich shining ore.

Alpine County.—From several issues of the *Miner*, the last received bearing date, July 27th, we condense as follows: The claims owned by Delo, Caulkins, and others, on Myer's Ravine, are yielding handsomely this season. The present owners purchased the ground some three months ago for $9,500, and since that time have cleaned up about $5,000 .....Mull, Evans & Co., at Buckeye Hill, Bridgeport township, after a run of a month, cleaned up $22,000. This is about an average yield for these claims..... The Red Rock Tunnel Mining company, incorporated for the purpose of running a tunnel in Johnson's Hill, Birchville district, has already run 1,021 feet, and a contract has been let to run 400 feet further. At the point to which the tunnel is completed, it is 419 feet to the surface. This tunnel will furnish an outlet for over a mile of mineral land, the range being that lying between Birchville and Kate Hays' Flat. The mouth of the tunnel opens into the Middle Yuba. When this tunnel is raised to the gravel, it is estimated it will be nearly 5,000 feet in length. .....Two or three claims on the Hercules, a prominent and well-defined lode, it is thought will be worked this season. The Globe claim is owned by an Eastern company, who have most of the stock taken, and money deposited in the Ninth National Bank, New York, for the purpose of opening it. The original Hercules claim is owned by the Monitor Consolidated Mining company, the agents of which, now in New York, assure the miners here will be all right very soon, and go a-head with renewed energy. The Hercules is an undoubted true lode, and shows the finest quartz to be found outside the Comstock. All it wants is opening to sufficient depth where pay ore is a sure thing.....The workmen in the Mowyer tunnel have struck quartz again. The vein is small but of good character.....It is anticipated that reduction works will soon be erected to work Tarshish ore.....It is stated that parties owning a controlling interest in Buckeye No.

2 claim, will start work in a few days.....The Rippon company, owning the old Mammoth ground at Silver Mountain, has again resumed operations. It is said they have as good a prospect as any company in the district.....The Mountain company, No. 1, are still running in soft rock, and making fine headway. .....The Davidson mill proposes to contract with the IXL Mining company for 100 tons of ore, at $100 per ton. It is thought that the quality of ore comprehended in the contract will work so as to leave a margin of profit to the mill, which has stood idle for some time.

Meadow Lake District.—The *Transcript* of July 24, has the following items: The Green Emigrant company has taken out fifty tons of ore which was crushed at the California mill, and paid $25 90 per ton. This rock is from ten to twelve feet below the surface. The company will make another crushing of 100 tons at an early day.....The Mohawk and Montreal is one of the most thoroughly developed mines of the district, being opened 250 feet below the surface. Fifty tons of rock from this ledge, worked in their new mill, paid twenty dollars per ton in free gold, yielding in addition a large quantity of rich sulphurets..... The Gold Run Phœnix tunnel has been run 200 feet, striking a large ledge with 150 feet backs. The ore is of excellent quality, abounding in free gold .....On the Knickerbocker ledge, California company, a drift has been run 150 feet below the surface. This company is taking rock from the top which will be crushed in a short time .....The Confidence company, Pacific ledge, are assorting rock to be worked, which was taken out last winter. It is estimated that this rock will pay forty dollars per ton..... The Kentucky company, whose claims join the U. S. Grant, are about letting a contract for a tunnel 1200 feet in length, to tap their ledge 150 feet below the surface.....The Grant has been recently incorporated, and the new company are about erecting a new twenty-stamp mill.

Nevada.

The Comstock.—The San Francisco *Mercantile Gazette*, July 29, says: In mining stocks there has been a pretty general recovery from the panic of the previous week, which was too violent to last. The metallic product of the lode is greater than ever, and the mines generally are as prosperous as ever; in many cases more so. The Crown Point mine, which was the chief cause of the panic, in the preceding week, rose from $1,221 to $1,590 rapidly, on a rumor that ore had been reached in the 600-feet level. This proved, however, to be but a streak 30 inches wide, not the main vein. The assay report of a narrow strip of ore, east side of the south face, of 550-feet level, gives nearly all gold, or per ton of 2,000 lbs:

Silver—1.21 ozs, at $2 29.....	$1 56
Gold—2.24 ozs, at $20 67.....	41 45
Total.....	$43 01

The stock closed at $1,350.....The Savage company's annual meeting resulted in the election of Alpheus Bull, Thos. Bell, M. Maybium, A. H. Rose, and A. Hayward. At a meeting of the trustees, Alpheus Bull was chosen President, and E. B. Holmes was elected Secretary. The receipts for the year were $2,985,899, of which $2,912,699 was bullion, against $1,414,979 in the previous year. There was paid out this year $1,120,000 to stockholders, being twelve dividends of $116 each. The price of the stock was last year $1,000, consequently the holder has received 112 per cent. this year. The stock fell from $4,400 to $4,000, and rallied to $4,200. A special meeting of the stockholders will be held to-day for the purpose of increasing the capital stock to $3,500,000, and dividing the same into 16,000 shares of $200 each. This will doubtless be done, thereby enabling those of limited means to invest in the largest producing claim known.....Hale & Norcross stock remains out of the market. The work at the mine goes on regularly, producing the same quantities, and this month averaging much higher grade than last month. The shaft continues to sink rapidly, and is now down and fully timbered 558 feet. By the first of September it will have made connection with the present working level, when the expenses will be generally curtailed.....Gould & Curry stock, which stood at $775, went down in the panic to $625, and recovered to $710. The Gould & Curry mill is at present undergoing a thorough overhauling. By the changes about to be made a saving of ten cords of wood per day will be made .....Chollar & Potosi stock has been influenced by the general causes that have operated upon the market. It fell from $450 to $408, closing $435. During the week of July 18th, 2,318 tons of ore were sent to the custom mills, against 5,186 tons in the previous week. The timbering in the 611-feet level is nearly complete, but the shaft will go down 100 feet more before drifting .... Kentuck stock has fluctuated between $401 and $360, closing $380. The bullion receipts for the week to 22d were $10,777. For the month to 23d inst., $66,867 43, against $68,507 same period last month. There was more ore worked this month from the upper levels, which are not so rich as the lower ones. In the past ten days the mine has hoisted 78 to 80 tons per day for the Yellow Jacket.....Ophir stock fell from $235 to $140, under rumors of an assessment of $36 per foot. The prices recovered at the close to $155. The cross-cut 210 feet north of the main east drift, has run in fifteen feet of the vein without reaching the west wall.....Imperial stock has remained very firm, ranging from $200 to $215, closing at $204. The receipts of bullion to the 22d inst. were $51,000; about the same as last month.....Overman stock rose from $167 to $245, and closed at $200. This company has been the object of very earnest bear attacks, and there are outstanding short contracts for 978 shares, nearly all the stock at low figures, while the stock is so held that a slight combination would produce a very close "corner." The lawsuits against this company by the ex-trustees have all been decided in favor of the company. The legality of the annual election has been fully sustained. The mine in the meantime has greatly improved. The receipts of bullion are $43,000, of which $10,000 this week. There are large bodies of ore on the 300 feet lead and 226 feet level. A private letter states: "The north breast in the 333 feet level is in fine ore, twenty-five feet wide, and assays from $42 to $76 per ton from average samples. In the 226 feet level there has just been developed a fine body of redish ore, very rich, and extensive arrangements are making to extract 100 tons per day."....Sierra Nevada rose from $14 to $25, declined to $18 and recovered to $21. The delinquent sale took place on the 24th. Only thirty shares out of 3,000 were sold, and the rate was $17 50; and on the 26th a new assessment of $10, payable August 30th, was levied. It is stated that pumping works will start on the 15th of August..... Confidence was sold at $55 to $62 50.....The San Francisco *Commercial Herald*, July 30th, says concerning the Crown Point mine: From the Superintendent's weekly report, dated July 19th, we obtain the following: Ore delivered to custom mills, 589½ tons, showing an approximate value of $20.223 34; extracted from the mine in the same period, 584½ tons, the 65 per cent. average assay giving $34 39 to the ton. The ledge on the east vein had been opened 121 feet; the cross-cut east from the 500-foot level had been carried forward twenty-seven and one-half; the winze from same level was 82 feet in depth, and the east drift on the 600-foot level was in 105 feet. Advices to the 24th instant states that the average 65 per cent. assays for the past three days have been $30 80 of ore obtained from the 400-foot level, and $46 11 of ore taken from the 500-foot level .....The Virginia *Trespass* says: During the month of July there was shipped from the Gold Hill office bullion of the value of $481,620 65. The report of the Virginia office has not yet been completed.

Quarterly Returns of Mines in Nye County.—We give below the amount or ore worked during the past quarter from the mines of Nye county, and the average yield per ton, as compiled by the Belmont *Reporter* from the books of the County Assessor. That paper says: With the exception of the Murphy, the Silver Bend, the Belmont and the Liberty ores, it was all reduced at the mills in Lander county. It is the duty of the Assessor of that county to make returns to the assessor here of the amount of ore taken from Nye and worked in Lander county, and its yield, and no doubt the Lander county official congratulates himself upon the faithful performance of this duty; but in scanning the list given below, we can of our own knowledge discern many voids which it is important should be filled. We will mention some of these, and hope to hear some satisfactory explanation for the discrepancy, as we cannot sit quietly by and see the funds which belong to the treasury of Nye county either lost or diverted to other channels. During the past quarter the Bullion company has sent, at a low estimate, to the mills in Lander county, from the Fisherman ledge in Reveille district, fifteen tons of ore, the yield of which ranged from near $300 to $500 per ton; other lots of ore have also been sent from the Reveille mines to Austin, not enumerated below; several tons have also been sent from Morey district; a ton was taken from the Achilles ledge in this district; a lot of about two tons was taken from Argentoro, and we presume there is much more from other localities—all of a high grade. Here are the figures:

Mine.	Tons.	Pounds.	Av. per Ton.
Murphy, (Twin River)	805	1,000	$92 94
Transylvania, (Silver Bend Co.)	100	632	66 20
Transylvania No. 3, (Belmont Co.)	125	1,232	54 95
Transylvania No. 1, (Belmont Co.)	676	1,110	39 08
Liberty, (San Antonio)	100	....	308 00
Teutonia, (Milk Springs)	1	46	58 23
Westfield, (Reveille)	...	1,679	408 00
Wild Irishman, (Union)	2	296	262 89
J. Ritter, (Reveille)	...	1,300	161 72
Canada, (North Twin River)	...	1,748	367 76
Adriatic, (Reveille)	...	940	162 32
Cornucopia, (Enterprise Co., Reveille)	1	1,620	611 37

In the above figures we find the result of the Wild Irishman ledge of Union district to be $262 89 much more, we are assured, than it actually yielded. Many will doubtless be surprised at the small amount given as the average yield of the Transylvania—the famous Highbridge of Silver Bend. The ore worked has been taken to the mill with but very little assorting, and treated by the wet crushing process without roasting, the mill operators claiming to save but from sixty to seventy per cent. of silver. As an example we cite the case given above of the 100 tons from the Silver Bend company's Transylvania (better known as the Child & Canfield claim). The amount upon the Assessor's books given as the yield is $66 20—a greater sum than they actually obtained by the mill—while the average pulp assay of the entire lot was $101 89. These tailings, be it remembered, are all carefully saved for future working, and will eventually be made to contribute the precious metals they contain to the commerce of the world.

Colorado.

In considering the resources and prospects of this Territory, says the Denver *Gazette*, one cannot but be struck with the immense importance of the mining interests, considered in connection with the progress of Colorado towards wealth and prosperity. If mining can be once placed on the same footing with agriculture, as a business from which regular and steady profits may be derived, the advance of this Territory in population and means will prove astonishing to even those who entertain the highest opinion of its future. So far as the season has advanced we cannot congratulate our readers on the progress that has been made by miners and mill owners occupied in raising, desulphurizing, and crushing the sulphureted gold ores of Gilpin and other counties. Instead of advancing, we believe this branch of industry has declined since last year, and that the amount of gold exported from Colorado during the past six months will not compare favorably with the exports during a similar period in 1866. It is possible that the "California," or "German" process, as it is often called, may yet effect a revolution in gold mining; but, just now, the less that is said about what the mill owners are doing around Central, the better it will be for the good name of Colorado as a prolific gold field. From this rather dismal aspect of affairs, it is a relief to turn to our silver mines, and contemplate their gradual but sure advance towards importance. Since the early spring, Georgetown has been the centre of energetic mining and milling operations, the beneficial effects of which will be sensibly felt before the end of the year. With regard to the extent and value of the silver-bearing lodes, every dollar that is spent in their development affords additional proof that they are permanent and valuable mines. Since the discovery of the Anglo-Saxon lode, the mountains in the neighborhood have been found to be full of the precious metal, and the veins containing it show every characteristic that experienced miners delight to see. It is placed beyond a doubt that lodes in the neighborhood of Georgetown can be worked for their silver, and be made to pay. Smelting has not made much progress up to the time we are writing, but quite as much has been done in that line as could be expected in so short a time, considering the disadvantages that had to be contended with. Four smelting works will in a few days be in active operation, all of which will be found able to contend with the most refractory ores the district can produce....The *Register*, August 13, says: The Pewabic G. M. Association are preparing for early and vigorous action. Their hoisting works are nearly completed. The main shaft is down ninety feet, having a crevice approximating six feet of pay-rock. .....A new discovery, called the West Pewabic, has been made recently by H. F. Sawyer. He claime it to be an extension of the famous "and only original" Pewabic, so popularly known here. A shaft has been sunk to the depth of twenty-five feet, disclosing a vein of ore fifteen inches wide, and of the same character as its great prototype. Something over a cord has been extracted for trial. It will be treated with stamps in John Mennell's mill, Eureka. If satisfactory, the work of mining will be pushed forward vigorously . The California Reduction Works opened yesterday with triumphant success.....Belden, of the Smith & Parmelee company, has overcome all obstacles and penetrated an immense cap on the Briggs lode, below which is now developed a beautiful crevice of ore fourteen inches wide. Two superb specimens were exhibited in our office yesterday. They were literally netted with fine wire gold. The shaft from which they were taken is four hundred and twenty-five feet on its way to China. It is located one hundred and fifty feet to the eastward of the claim now worked by the Briggs company. It is said that the Winnebago lode has rejoiced its owners with a very large and very rich vein of ore in which much fine gold is visible.....The Trust Mining company, H. B. Brastow superintendent, are working their Bobtail property through the cap. They are four hundred feet down, and have a mixed crevice three or four feet wide. Sixty-eight tons of ore from this mine was sold to Naylor & Co., of New York, last year for $100 per ton, shipped to Atchison, thence to New Orleans and across the Atlantic to Swansea, where it was sold to a smelting company for $276 per ton, and from which they realized a handsome profit after treatment. This will give a fair idea of its value. The best material now produced from it is being carefully corded up on the premises, to be worked by Prof. Hill when ready to run. The second and third qualities will be sold by assay, or reduced by stamps and dressed for smelting.....The *Tribune* says: A quantity of gold from the Cherry Creek diggings, lately melted and assayed at the mint, was found nine hundred ninety-two and a half thousandths fine (.992½). Mr. Eckfeldt, of the mint, informs us that this is the finest native gold that has ever been found. It was melted and assayed for the Colorado National Bank. We understand that the Cherry creek diggings are being profitably worked this season .... The Georgetown *Miner*, August 15th, has the following: The Watertown company have struck a fine vein of sulphuret of silver in the Henry Hart lode, that is remarkably rich. The crevice on this lode is from three to four feet in width. They are also taking out very rich ore from the Mohawk..... General Baldwin has had one hundred pounds of selected ore from the Proteus lode, West Argentine, run at the Georgetown Smelting company's works. The result was forty-one and a half ounces of silver bullion; coin value, $56 02½, currency value, $72 83½..... Mr. Smith, agent of the Muscovite Mining company, has commenced active operations upon the Muscovite lode. This company was recently organized in Keokuk, Iowa, with a full paid capital stock of $120,000.....Two bars of silver bullion were shipped this morning by the Georgetown Silver Smelting company, their united weight being 342½ ounces, coin value $446, 37½, currency value, $601 08.

Idaho.

We have copies of the Silver City *Avalanch* of August 3d and 10th, from which we cull the annexed summary of mining news: The Oro Fino mine is yielding richer ore than ever before. The last run of seventy tons cleaned up $10,000—over $140 per ton—and there is much more of the same class of ore in sight in the mine, and some out .....We visited the Oro Fino mine on Wednesday. We found very rich ore on the dump, and more in the mine. The company has—considering its condition at the time of beginning—been working the mine to the best advantage. The north shaft is down eighty feet from the main tunnel, and upon the south face ore is being extracted, with the lower part of the work most advanced, thereby putting the mine in better condition as fast as possible with the force employed. At a distance of four hundred feet south, a double shaft is being put down by three shifts of miners, and its present depth is over thirty feet, and will be sunk, with all attainable speed, to a distance of eighty feet, and from there a tunnel started north to meet one from the north works before mentioned. This south shaft once down, there will then be four hundred feet of ledge well opened down eighty feet, with a face of the same height to the south of this body. In all parts of the lower works the ledge is a full average of five feet, and of a quality as rich as ever produced by this justly celebrated mine. Within two months or less, the mine, as at present worked, will be in such condition as to greatly reduce the cost per ton of mining, and every clean up made the yield is larger than the previous one, and at no time has the ore borne such a high average richness .....There is good reason to believe the company will pay dividends in 1867; and would have done so ere now but for debts incurred before commencing to mill the ore.....A clean-up of ore from the Baxter mine, crushed in the N. Y. & O. F. M. Co.'s mill, gave $40 per ton. This lot of rock was just as it came from the shaft, and contained much dirt and worthless matter. This working demonstrates that the ore can be mined and milled at a profit..... The Whiskey ledge is being put in the condition of a paying mine, and so far as worked, is really a profitable mine. About five and one-half tons of ore were sold at the mine, and the buyer made money on the transaction. We are not accurately informed, but believe it to be no exaggeration to say this lot of ore gave a gross yield of near $200 per ton.....Wells, Fargo & Co. put messengers on the railroad stage line to Hunter's, a couple of weeks ago, and since then $200,000 in treasure has passed over the route—$50,000 of which was produced in Owyhee.....The machinery of the Iowa and Idaho company's mill has arrived in Flint, and it is expected that the mill and furnace will be completed by next September. The Forrest ledge, belonging to this company—is looking better than ever before. The main shaft is down eighty feet, and the vein has increased to a width of seven feet. The Black mill is running on Leviathan rock, and we are informed it is doing better than before. The shaft on the Forrest ledge is down over eighty feet, and the past week very rich ore was struck in a vein four feet, and it increasing..... Many of our Western exchanges are very bitter on Wells, Fargo & Co. for the disgraceful manner in which they manage the transportation of mail (especially newspaper) matter. The following, taken from the *Statesman*, will serve as an instance to explain to our Territorial readers why they didn't get the JOURNAL OF MINING as early and as regular as they should: Judge A. G. Cook arrived over the plains, and relates that at Medicine Bow he saw a pile of mail bags—about a wagon load—lying by the side of the road in the mud. Some of them were leather sacks, locked. He was there two days, and saw Wells, Fargo & Co.'s coaches passing both ways, and no notice was taken of the pile of mail matter. He saw mail bags lying about in different places along the road—sometimes at stations, and sometimes by the side of the road. In one place bags of mail matter were thrown into mud-holes to walk over upon, and he walked over them himself, and others did the same. Newspapers were plenty at such places; everybody had them. At another place a letter bag was found in the road cut open. Judge Cook also says the road was in good travelling condition.....The *World* of July 27th says: A wondrously rich gold ledge has been discovered near Placerville, Boise county, about four hundred yards above the Pioneer. Mr. Britten reports that he examined the ledge, washed up some of the rock himself, and exhibited to us the product. From two shovels-full of rotten rock he got out over two and a half dollars of very fine gold. The ledge is uncovered, and has been tested a length of seven hundred feet. It is from two to three feet wide, and all along, in every spot, yields about the same wonderful product of gold. So far it has averaged between $2 50 and $5 to the pan. The rock crumbles like so much loose earth in water, and is very easily worked. The washings from it have so far paid $150 per day to the hand.... The same paper, August 7th, learns from Mr. William Lynch and others, of Placerville, that the newly discovered ledge continues to pay extravagantly rich all the way along the eight hundred feet of stripped surface. The intensely hot weather continues, with the thermometer making from 100° to 107° during midday; but the nights are revivingly cool.....A correspondence in the Lewiston *Journal*, dated Warren's Diggings, July 21st, says: Captain Williams is here, and has sent out an order by this express to San Francisco for a five-stamp quartz mill, to be propelled by water-power. He will roast the ore before crushing; also roast in a furnace after crushing. He expects to have the machinery here and in operation this fall. The Miner's Mill Co. is active, and will order their machinery in about ten days. Money is being paid on the instalments, and it is believed that sufficient will be received within that time to purchase the machinery. A new gold lead has been found on the divide near Hell's Gulch. The rock is very rich. ....."Mark" writes to the *Vedette*, from Idaho City, a letter dated August 7th, from which we extract the following: The placer and gulch mines are about played out for this season, and the bricks are now taking the run. Quartz is also coming in for a share of the attention of ye honest miner. The Rosenbaum mill, on the Junietta ledge, owned now by J. P. Lambing, is paying big; they have struck the ledge down about ninety or one hundred feet, about eighteen feet wide, very rich, and it only costs about four dollars per ton to get the rock out and crush it. The Smiths, with the Landon mill and ledge, are also doing well. Harvey, on the Madison ledge, is running arastras, and is doing well. Our quartz ledges are turning out far better than was an

ticipated. and the further they sink on them the better the rock is. Main street, above Wall, is not built up as it was before the late fire—the miners having dug the bottom out of the street, so that it is almost impassable. The business portion of the city is now mostly below and on Wall street. Idaho is not yet dead, and bids fair to have a long and prosperous life yet. The most of the Lemhi-ites are sick of that country, and are returning here; they say that Lemhi is a big bik. Our citizens feel and know how they are being imposed upon by the little-souled stage line across the plains. We do not get our Eastern papers more than once a month, and then in broken doses, so that they are worthless; and if things continue as they now are, our people will be compelled to quit taking Eastern papers and periodicals. As we get them now, they are a perfect nuisance. The Sweetwater mines are attracting some attention here, and next spring there will be a large immigration from here to those mines; and if Uncle Sam does not interfere with the boys, they will help to clean out poor Lo! the Indian, like a shot-gun, in double-quick time. There has been some very rich diggings struck near Placerville, and also some diggings on the headwaters of the Payette. There are several prospecting parties now out, and more going; time will tell what they find. The Chinese are as thick here as black birds, and more coming. There are about 6,000 in Boise county now. This county looks like a Chinese colony, with a few whites mixed with the Chinese settlers. The health of Boise Basin is good. We have plenty of vegetables here; fruit, fresh butter and all other necesssities of life in abundance, with some of the luxuries.

Canada.

The Madoc *Mercury*, August 24th, says: Our notes this week will be brief, for work, rather than talk, is now the order of the day. On Saturday last Mr. Wyckoff assayed for Mr. R. R. Perry ten pounds of ore from the shaft on the island in Hog Lake (part of Lot No. 11, in the 13th concession of Huntingdon,) and obtained a trace of gold, of the value of $6 to the ton, and also a trace of silver, value $1 to the ton. The shaft is now about thirteen feet deep.....Dr. Otway, on the 17th instant, made a quantitative analysis of four ounces of rock from the Madoc Gold Mining C'o. of Toronto's shaft, on Lot 17, in the seventh concession of Madoc, which yielded in gold 1 gr., equal to 16 oz., 13 dwt. and 8 gr. to the ton, or $320; and in silver 4 gr., equal to a little more than 66 oz., or $83 25 per ton; total, $403 25. This exceeds anything yet found outside of the Richardson mine ....Messrs. Turley & Gilbert's crushing machine at Eldorado is now completed, and on Wednesday was set in motion to test its efficiency; but owing to the dry weather, there was not a sufficient supply of water to be obtained for carrying on all the operations fully on that occasion. Provision has, however, been made for procuring a sufficient supply of water in future. The machine is in excellent working order, and Dr. Otway informs us that it has a first-class battery of stamps.....The employés—numbering upwards of fifty—in the various mines, who had neglected to comply with the provisions of the Mining law, were on Thursday summoned before Colonel Campbell, and required to take out the necessary license..... Arrangements are being made to hold a mass meeting of miners in a few days at Eldorado, for the purpose of protesting against the present mining regulations, and to petition for their modification; so that impediments may be removed, and encouragement afforded to those who are practically engaged in developing the mineral resources of the Quinte division.

COPPER.

Michigan.

The Ontonagan *Miner*, August 17th, says: Our visit the past week along the range found no marked feature which has not been noted in former issues. The prospects for remunerative market rates for metals is already exercising a healthful influence, inspiring fresh hopes in employers and employees, which if continuous will soon change past apathy into the wonted energy and activity of former years. In heavy copper there is nothing especially worthy of note, save at the present extremities of the district, (in active mines) viz.: the Ridge and the National. So palpable is this fact that we may safely apply an old mathematical axiom, by saying that "the sum of the extremes is equal to the sum of the means." The Ridge more than doubled its June product last month, raising twenty-five masses, aggregate weight 24,371 lbs., and 13 bbls. barrels work, 10,678 or 17 tons 1,049 pounds, on a cost sheet of $2,300. This was done with less than twenty miners, and the show of heavy copper to-day is better than it was a month since. A number of smaller masses up to a ton weight were lying round No. 3 shaft, and they had one under the adit ready to hoist of two and a-half or three tons. They were also strewed round No. 2 shaft, from which one of at least two tons weight had just been raised, yet the main stopes and strongest points in the levels seem to have improved in appearance by the removal of what has come away, and they could again double the July product, with a small addition to the mining force. On the 1st inst. they had raised and shipped, or marked for shipment, 72,099 lbs of mineral for 1867, at a cost here of about $18,000 or 11 1-9 cents per pound, and by doubling the present mining force we have no doubt but it could be reduced to 10 cents per pound of mineral on the mine for the entire season. They have commenced to reduce the immense accumulation of rich stamp rock on hand by the use of the Omiga mill.

COAL AND IRON.

Pennsylvania.

The Pottsville *Standard*, of August 24, says: The amount of black-band iron ore shipped over the Mill Creek railroad for the week ending August 17, 1867, was 33 13 tons; previous, 3,201 18 tons; total, 3,235 11 tons .....The only shipments of black-band for the week were from the slope of James P. McGinnes & Co., where the water was not so troublesome as at the other black-band workings. The ore at this slope is apparently increasing in solidity and richness .....At the drift of Luther & Dreher, at Lick Run, the freshet destroyed the track of the branch railroad, and shipments will be suspended until the road can be repaired, which will not be for several days, as the repairsmen are engaged on the Schuylkill Valley railroad, which was also badly damaged.....The repairs going on at the McGinnes shaft were suspended on account of the water, but no material damage was done.....Concerning the steel works, sufficient money has been subscribed to warrant the success of the enterprise, and the erection of the works will be commencad at once ... The heavy rains of last week caused a great deal of damage in this county. Many of the mines were filled with water, and work was suspended in them until it could be pumped out. On Friday night and Saturday morning the streams were swollen to an unusual height, and the loss of property will probably be considerable .....In Port Carbon all the bridges but two, the iron bridge and the one below it, were carried away. In St. Clair all, or nearly all, the bridges were carried away. Will Creek became a roaring torrent, and all the portable property within its reach was borne away to the Schuylkill. The river was very high, and did much damage at Palo Alto. The canal boats of John Hurley, of Pottsville, and Laughlin Deegan, of Fishbach, were carried over the dam, and driving rapidly down against the wooden pier under the bridge, the pier was knocked away, and the bridge was left in a very insecure condition. The river was higher than it has been for over thirty years. Atkins' furnace was flooded, and work was suspended. In Mt. Carbon some houses were flooded, so that they had to be abandoned for the time. Norwegian Creek, which somewhat damaged the culvert and railroad on Tuesday night, finished the work of destruction on Friday night, by completely wrecking the railroad and the timber culvert at Callowhill street. The country roads were badly washed and gullied, many of them being almost impassable. In Tamaqua, the bridge on Nescopec street was carried away, and much damage was done to property by the giving way of the creek wall. On the Little Skuylkill railroad three railroad bridges were carried away, and the track in many places much injured. On the East Mahanoy railroad one bridge was destroyed, and the track torn up. The track of the main line of the Reading railroad in this county was not materially injured, though the trains were several times detained an hour or two by the water covering the track, which necessitated careful progress. The trains over the Catawissa railroad are obliged to use the Schuylkill Valley road instead of the Little Schuylkill, on account of the damage done by the storm. The freshet caused considerable damage in Northumberland county. A number of bridges were carried away, and the Northern Central railroad was impassable for a time from the injury done to the track and the bridges, The collieries were also much damaged.

Montana.

A correspondent of the Montana *Post* writes: Messrs. David Morgan and James Eade have discovered a vein of coal about four miles from Bannack, which, when thoroughly proved up, will be one of the greatest aids to this country that has ever yet been discovered. The vein is five feet thick, dipping into the hill at an angle of about 30 degrees to the east. They have run a tunnel 60 feet, and every foot of the distance shows a gradual change for the better, and now it may be safely said of them, that they have struck a good coal bed, and, though hard working men, may be classed as benefactors of this district.

Mining in Montana—Causes of Failures—High Wages—No Manufactures—Cost of Living.

UNION CITY, Montana Territory, July 6, 1867.

I find in Montana the same ill-conceived, badly managed and of course, unsuccessful mining enterprises that the gold fields of Colorodo present, only on a much smaller scale. The failures are not so nearly universal here as there, for the reason that the ores are richer, of easier access, and as yet they have not presented the combination of refractory metals which have defied all ordinary processes in Colorado. Some companies have succeeded in Montana, and are now doing well, with flattering prospects ahead; but in every instance, so far as I have been able to learn, they have been successful rather in spite of the management than because of economy and skill in their direction. There are from twenty-five to thirty quartz mills in this Territory, all completed and supposed to be in order for running. Some of them are total failures, and hopelessly bankrupt; others are partially defective in their machinery, and must await modification or repairs; still others have the machinery and the power, but have been defrauded or disappointed in their mines, and a very few are more than paying expenses. All these failures are in the midst of the richest gold and silver mines on the continent, or probably in the world, and where the gold is more easily obtained than in California—the Montana quartz, as a rule, paying from the surface down, while in California and most other mines of the precious metals shafts must be sunk hundreds of feet before "pay-rock" can be obtained. Unfortunate Eastern stockholders in gold companies, doubtless, are at a loss to understand why their enterprises, embarked in with such confident hopes, drag along in wasteful expenditure, and finally end in serious or total loss; but any one of them, possessing ordinary business sagacity, need but glance at the actual condition of things here to appreciate that their failures are the legitimate, inevitable results of their own follies, and not the fault of the mines which teem with boundless and available wealth. There ought to be hundreds of quartz mills in operation in Montana to-day, paying the stockholders their entire cash investment twice a year in the shape of dividends; but there must be a radical change in the prevalent system of purchasing mines, selecting, freighting, and constructing mills, and in their general management, before success will crown the efforts to develop the wonderful wealth of these mountains. There are leads enough opened in this Territory, proffering ore that will yield from $30 to $150 per ton, to employ five hundred or more stamp mills indefinitely, and by the exercise of a sound judgment in the purchase and opening of the mines, the ore could be reduced at a total cost, including mining and delivery, of from $10 to 20 per ton. While in California they work ore profitably that yields from $10 to $15 per ton, here no ore can be reduced to pay expenses on a yield of less than $30 per ton, and in many instances it must yield $50 to pay any profit. It is true that wages are much higher here than in California, and must remain so for years to come. The Territory produces nothing but gold, silver, grain, and vegetables and a little stock. It has no manufactures and will have none to supply the present generation. Machinery, clothing, groceries prints, iron, coffee, lead, etc., must be purchased at fabulous prices. Old iron is worth fifty cents a pound; sheet iron is worth 70 cents; copper sheets command two dollars per pound; lead ranges from forty to seventy cents per pound, and the necessaries of life are so costly that $5 per day is not more than living wages for ordinary laborers, while experienced miners, engineers, and all classes of skilled labor command from twenty to fifty per cent. more. This cannot soon be remedied, even in a country where wheat is sometimes fed to stock, as it was last winter in some of the bountiful valleys, because there was no market for it. Two years before flour was worth as high as $110 per sack of one hundred pounds in gold, and the large profits realized by those who exported it from Salt Lake, stimulated them to repeat the operation last year, and they were met with an abundant supply, indeed a surplus, of home-grown flour, and had to sell out at less than freight Beyond the agricultural portion of the citizens of Montana, none seek to produce anything but what they expect to yield a speedy fortune, and no systematic efforts are made to lay the foundations of rich and prosperous communities. The settlers are mostly miners who count on but a temporary residence here, and the traders and speculators who ever follow in their track to gather the lion's share of the precious metals after they have been produced. Just now the Territory is drained of one million of greenbacks to pay freights, and money commands from ten per cent. a month up to six per cent. a week. Business ebbs and flows to a degree unknown in old centres of trade, and sudden wealth and as sudden bankruptcy sweep close upon each other. Two years ago, when the gulches were producing many millions in the leading settlements, the scant supplies of goods sold readily at prices regulated merely by the usually elastic consciences of the merchants. Last year business was still brisk, and this year an immense surplus of goods has been shipped, the market is perfectly glutted, and very many articles are sold at St. Louis prices. Some merchants have been compelled to borrow money at from ten to twenty per cent. per month to pay freight at Fort Benton and then sell their goods at a loss of fifty to seventy-five per cent. to meet their obligations. One year presents no data for the business of the next, and everything goes by surges or waves to fortune or disaster. Even the mining has been done in the most restless, wastful manner. The richest gold beds are hastily and imperfectly hurried over, leaving more in them than is gathered from them, and new prospects or diggings call the heroes of the pick and spade from Alder to Helena; from thence to Deer Lodge; thence to Salmon River, and so on through the hundreds of placers the incalculable wealth of the mountains is developed. By-and-by, system, patience, and practicable enterprise will come to this great work, and the wealth of Montana will startle the world. Just how soon the new order will dawn, I cannot pretend to judge. If I had not gone through the desolation and wasted millions of mining regions of Colorado, I would predict the speedy advent of most successful enterprise in Montana; but if good business men in the East will persist in wasting fortunes in Colorado, I cannot assume that they will not continue to repeat the same insane profligacy in Montana—soon encircle its hundred of millions of accessible gold with bankrupt corporations, and paralyze this peerless fountain of richness. It is not too late to save Montana from this terrible curse, and save the many millions which I fear may be wasted, or worse than wasted, in the most inviting field for legitimate enterprise the whole world presents. The chief cause of the failure of most mining associations organized in the East, is the loose, haphazard, and profligate manner in which they are started and prosecuted. Even the most judicious and careful men in their regular business at home, seem to loose sight of all sound principles in projecting and directing mining operations 3,000 miles distant. In nine cases out of ten they are imposed upon in the sale of mines, not because they are wanting in gold, perhaps, but because they are so scattered that they cannot work them to advantage. The best mines in Montana are still held in a manner that precludes successful development. One man will own the whole or a fraction of "discovery claim," (the 100 hundred feet on which the lead was discovered,) and there will be different owners for Nos. 1, 2, 3, 4, and so on each way from discovery, and most likely no man will own more than a half, or fourth, of the 100 or 200 feet of each claim. Take the Dakota, the Ora Cache, the Golden Era, the Whitlock, the Boaz, the New York Bell, the Pony, and the hundreds of other first-class leads already partially developed, and the claims, or fractions of claims, are generally owned on the same leads so promiscuously and adversely that economical mining is impossible. Most of the owners, as a rule, are men who have no means to develop their claims, and if they had the means, they could not afford to do so. Each would have to sink an expensive shaft in his claim or faction, to reach, say from twenty-five to one hundred feet, and that is impossible. All believe that the lead is valuable, but each waits for the others to prove the richness of their whole property, and when some one does venture to make the costly and hazardous experiment, and this establishes the value of the lead, he must then pay the others fabulous prices for having developed their wealth. Development is not the rule among the miners who own most of the valuable mines, or at least fractions of them.

The "freeze-out" game is much more common. One cannot succeed without securing additional claims, so as to justify shafts or tunnels, and his necessities are fully appreciated by the other owners, and they get up a most expensive "lay-out" for him. I have seen several parties sinking separate shafts in the same lead, producing ore at from $15 to $25 per ton, because of the small space worked by each shaft, where a tunnel would deliver all the ore of the lead at a cost not exceeding five dollars per ton. In this way companies are often involved in disastrous expenditure to procure their ore from first-class mines. They believe certain leads to be good; they buy two, five, or ten hundred feet on them without knowing how their claims are located or how the lead can best be worked; they invest thousands of dollars to purchase, ship, and erect machinery, and when they want their ores they discover that while they have plenty of good ores underground, several others own intervening claims, and compel them to buy them out at ruinous prices or work their claims of good leads at a positive loss. No company should ever purchase a lead for the purpose of working it without an accurate map showing the location of every claim on the lead, the streams of water accessible to mills, the formation of the ground traversed by the mine, its altitude and grade, its timber, and satisfactory points for shafts or tunnels which will command the ore at the least cost. When companies announce in their prospectuses that they own claims on a dozen different leads, whose names are in good repute as valuable mines unless they own connected claims on some some one or more well-tested leads, which can be worked by one shaft or tunnel, rest assured that the projectors of the companies either have been fearfully cheated, or they are seeking to defraud the public by the sale of stock that can never be valuable unless by accident. I have explained in detail this feature of mining claims, because it is the rock on which very many have wrecked the most sanguine hopes, and it is alike the interest of the country at large and of stockholders that they look well in the start to this peril. A mill once erected, whose success depends upon the control of adjoining claims, is certain to suffer extortion to a degree often fatal, or make its bed in bankruptcy, beside untold wealth.

Another fundamental error committed by nearly all companies, is the expenditure of hundreds of thousands of dollars to start mills before their leads are developed. This is the common disease that has spread hopeless failure throughout the mountains, and, strange to say, the most stupendous failures have been made by the most trusted scientific men. It will doubtless startle thousands of your readers, but it is nevertheless true, that there is not a single gold mine in Montana that is developed, and few, if any, in Colorado. Good "pay rock" has been found here in the surface ores, and they have been worked with tolerable success; but the character and value of the leads, down where they are clearly defined, no one has yet ascertained. Experienced miners judge of them by the walls, clay, pockets, and streaks, and pronounce them the most valuable and trustworthy in the world; but one claim of 200 feet on a lead may be of suspassing richness, while another may cap, or pinch, or narrow to almost nothing. One claim will present free gold, while the adjoining claim will be so strongly impregnated with iron as to defy reduction by the ordinary stamp mill. I have seen free gold and heavy sulphurets at the same depth, on the same lead, and within one hundred feet of each other. When the facts are considered, sensible men will see the folly of rushing up mills on undeveloped leads, where they have to run the risk of striking barren mines, or a character of fores that their mills will not reduce. No mining company in Colorado or Montana should entertain the idea of purchasing machinery for at least one year after they have secured their mines. When they have purchased their leads—always being careful to have their claims in a body or bodies, sufficiently large for the most economical mining—they should employ a trustworthy, experienced, and practical miner to develop their mines. Ten or twenty thousand dollars thus expended will prove beyond all doubt the character and value of the ore; and until at least 1,000 tons of ore are on the bank, its value proven, its cost calculated, and its peculiarities ascertained, nothing else should be considered. If the mines refuse to yield good ore at a reasonable cost the loss is comparatively slight, and the project can be abandoned without involving the sacrifice of the whole capital of the company, and the embarrassment of many of its founders. Companies thus foiled, with the expensive mills erected, are naturally tempted to borrow and assess additional sums, with the faint hope that they may succeed by mistaken perseverance, until finally hope and means fade out together and the enterprise is abandoned in despair. If the mines prove valuable, and an abundance of good ore can be produced at a reasonable cost, the character of the ore is next to be considered, and the selection of the proper machinery and power to reduce it, and save the largest

per centage of the gold or silver. For crushing all kinds of free gold quartz the ordinary stamp mill is the best, while for slight mixtures of pyrites of iron the Chilian mills and barrel amalgamators are preferable, as an indispensable adjunct. The stamp mill is the simplest and most wasteful machinery used in the reduction of ores. It requires less skill, and is less expensive. The Chilian mill does better work, and with the barrels, will often take more gold out of the ore after it has been reduced by the stamps and ordinary amalgamation, than the stamp process yields. When the ore is largely mixed with the base metals, as in Colorado, there is no process yet perfected that will reduce it profitably. The best scientific talent of the country, and of portions of Europe, is now directed to master these refractory ores, and they are steadily attaining a higher measure of success; but until they have entirely succeeded, amateurs have no business experimenting with any of the various patents which flood the markets. Companies which develop such ores will save money by waiting for science to overtake them, and they can do it with entire confidence that will ultimately make their mines profitable. When companies have thus fairly developed their mines and ascertained the character of their ores, they can readily determine what kind of machinery is best adapted to their wants, and they can then wisely proceed to ship it. First, however, they cannot be too careful in looking to the quality and completeness of their mills. There are mills now erected in this Territory which were worn out in a month. This is no country for defective machinery. It cannot be repaired, and missing pieces cannot be supplied. Every part of a mill likely to break should be duplicated, and a forge outfit is essential to success. There is, as yet, no foundry in the Territory. I learn that one is about to be established in Helena, but the stoppage of a profitable mill for days to get repairs done one hundred miles or more distant, is attended with fearful loss, not to count the exorbitant charges for work and transportation. If anything important is found wanting in the machinery when it arrives, it requires another season to supply it, as no trains or boats leave the East for Montana the same year after a mill is delivered on the ground and its defects discovered by its erection. One company here lost a year by the omission to send some essential portion of the mill. If they are improving the lost time in developing their mines, it was a fortunate accident, but they can claim much above the average of good management, if they thus made their supposed mishaps a blessing. The mill selected and started by the river, a first-class, industrious business man is wanted for superintendent. In most cases, some son or friend of one of the leading officers of the company, having no fitness for business that is easily understood in the East, is sent out to enjoy fast horses, good liquors and cigars, and speedily mismanage the company into debt and failure. Sound, practical, experienced, and frugal men only can conduct such operations properly. With wages from five to eight dollars per day, and everything else in proportion, mismanagement tells upon profits or capital here with a rapidity that Eastern men can scarcely appreciate. In no ordinary business in the East is judicious supervision so essential, and the dividing line between success and failure so narrow. I have, for obvious reasons consistent with truth and fairness, given the dark side of mining operations in Montana. It is one vast field of bewildering wealth, and I most earnestly hope to see it speedily and most successfully developed. Twenty millions of capital could be more profitably invested here than in any other locality; and by simply observing the same sound business principles which govern capitalists in other enterprises, not one dollar in twenty should be lost, while a very large majority of the investments would pay fabulous returns. In no other mining region are the leads so uniformly good and so easily tested; and they can, as a rule, be developed by tunnels, and the ore delivered at a very low rate. Not only the mountains, but the gulches are of incomparable richness. Alder gulch, that has already produced more gold than any one gulch in the world (so I am informed,) will soon be worked over again, and repeat its previous yield. It was once worked for ten consecutive miles, in claims of one hundred feet, and each claim yielded from $200 to $2,000 every twenty-four hours. Clear-headed business men are now gathering up the claims, and will, by one central flume, traversing the rock bottom, work over the whole gulch with vast profit, while others will wash down the rich hill-sides by the hydraulic process. In the mean time the rich bluffs from whence the gold of the gulch has been washed, will be disemboweled, and their leads, studded with gold from $30 to $1,000 per ton, will be worked, and boundless fortunes amassed. There is no part of this continent where Eastern capital is so much wanted, and where it will so well reward its judicious investment, as in Montana; and I entreat men to discard "professions," jobbers in claims, inflated speculative concerns, and lend a helping hand in the legitimate development of this slumbering wealth. Send practical men to secure leads properly located for development, and then, above all things, "make haste slowly." Test all things, and failure is hardly possible. Different degrees of success will be attained; but, upon the whole, there must be incalculable profits, and the colossal fortunes of the next decade will have their birth in the long unknown but richest offering of our national creation.—*J. K. M., in the N. Y. Tribune.*

MARKET REVIEW.

FRIDAY EVENING.

Gold and Silver Stocks.—At first board Columbian sold at 95c; Consolidated Gregory, $6 20; Edgehill, s.3, $9 05; Harman G. & S., $9@9 05; Corydon, b.3, $1 25; New York & El Dorado, s.3, $2 70; Seaver, s.3, $11 75. At second call Corydon sold, regular, at $1 25; Sensenderfer, ex d, sold after call at $11 25.

	August 23. Offered.	Asked.	August 30. Offered.	Asked.
Alameda	1 40	....	....	2 00
American Flag	....	1 00	85	90
Atlantic and Pacific	1 05	1 75	1 00	1 95
Bates & Baxter Gold	....	1 50	....	1 10
Benton Gold	1 00	1 10	95	1 05
Bobtail Gold	....	3 00	1 50	3 00
Fulton Consolidated	....	1 00	....	1 00
Columbian G. & S.	1 00	1 15	95	1 05
Consolidated Colorado	....	....	....	....
Consolidated Gregory	6 00	6 95	6 10	6 20
Corydon	1 15	1 20	1 25	1 30
Des Moines Gold	....	....	....	....
Downieville Gold	....	....	2	7
Edgehill Mining	2 80	2 95	3 40	3 45
Gold Hill	....	4 00	....	4 00
Gunnell Gold	2 50	3 00	1 90	2 05
Gunnell Union	10	25	....	25
Harman G. & S	7 50	7 75	9 05	9 15
Holman	....	20	....	15
Hope Gold	....	40	15	50
Kipp & Buell Gold	45	....	40	50
La Crosse Gold	....	90	60	80
Liberty Gold	4	6	3	6
Manhattan	....	110 00	....	110 00
Midas	2 35	2 40	2 35	2 70
Montana Gold	15	....	12	....
New York	1 10	1 20	1 00	1 10
New York & El Dorado	2 55	2 65	2 75	2 85
Nye Gold	4	6	....	6
Owyhee Mining	50 00	65 00	....	65 00
People's G. & S. of Cal	35	....	35	50
Quartz Hill	1 70	1 75	1 65	1 75
Reynolds Gold	....	6	....	5
Rocky Mountain Gold	1 30	1 40	1 30	1 45
Seaver Gold	11 90	12 50	11 75	12 00
Smith & Parmelee Gold	5 45	5 60	5 30	5 40
Sensenderfer	12 00	....	....	11 50
Symonds Fork	....	1 00	50	1 00
Texas Gold	11	18	....	18
Twin River Silver	....	70 00	....	70 00
Vandeburg	....	75	....	75
Yellow Jacket Gold	....	30	....	30

Copper Stocks.

	August 23. Offered.	Asked.	August 30. Offered.	Asked.
Caledonia	....	10 00	....	10 00
Canada Copper	....	....	....	30
Central Copper	21 50	....	25 00	....
Charter Oak Copper	....	7 00	....	3 00
Davidson Copper	2 10	2 15	2 00	2 15
Hilton Copper	....	1 00	....	1 00
Hancock	6 00	7 00	....	....
Evergreen B. Copper	....	....	....	10 00
Isle Royale	....	6 00	....	6 00
Knowlton	....	4 00	....	4 00
Mendota	....	....	....	4 00
Rockland Copper	....	7 50	....	7 50

Petroleum Stocks.—United States sold on the board at $3 50.

	August 23. Offered.	Asked.	August 30. Offered.	Asked.
Bennehoff Run	3 50	3 60	3 00	6 00
Buchanan Farm	25	27	24	27
Brevoort	60	90	60	90
Central	....	1 00	....	1 00
Cherry Run Special	....	5	....	5
Clinton Oil	....	1 50	....	1 40
Excelsior	5	15	5	15
Manhattan	....	20	....	15
N. Y. and Alleghany	2 75	3 50	....	3 50
Pit Hole Creek	....	50	15	50
Rynd Farm	12	20	12	....
United Pet. Farms	10	20	10	....
United States	3 20	3 40	3 30	3 75
Union	....	....	....	....

Miscellaneous Stocks.—Hamilton G. & S. M. Co.'s bonds, 85 offered; Rutland Marble, $15 asked, $11 offered; Walkill Lead sold at 48 on the board. In express stocks there is a partial reaction. The following are the current quotations: Adams Express, 73¼@73½; American Express, 71@42; United States Express, 72½@75; Wells, Fargo & Co.'s Express, 65½@66½; Merchants' Union, ($30 paid up), 26¾@17; Western U. Tel., 42⅞@43; Quicksilver, 28; Pacific Mail Steamship Company, 143@144; Reading Railroad, 1 0 3⅞; Erie, 34, 101¼.

Government Stocks.—Are firm at the following quotations:

U. S. 6s, 1867	137½@ —
U. S. 6s, 1868, regular	137½@ —
U. S. 6s, 1868, coupon	137½@ —
U. S. 6s, 1881, coupon	111¾@111¾
U. S. 6s, 5-20s, 1862, coupon	114¾@114¾
U. S. 6s, 5-20s, 1864, coupon	109¾@109⅞
U. S. 6s, 5-20s, 1865, coupon	110¾@111
U. S. 6s, 5-20s, July, 1865, coupon	108 @108¼
U. S. 6s, 5-20s, July, 1867, coupon	108¾@108¼
U. S. 6s, 1871, reg	117 @ —
U. S. 6s, 1871, coupon	118 @120
U. S. 6s, 1871, end'd coupon	116 @ —
U. S. 5s, 1874, reg	106½@ 109
U. S. 5s, 1874, coupon	110¼@ —
U. S. 10-40s, reg	99 @ —
U. S. 10-40s, coupon	102¾@102¾
U. S. 7-30s, August, large	107¼@107½
U. S. 7-30s, June, large	107⅜@107⅜
U. S. 7-30s, July, large	107½@107¾

Foreign Exchange—Is quiet, with a slight excess in the supply of bills over the demand. There is a good offering of provision paper. We quote:

London, (prime bankers') 60 days'	109¼@109⅜
London, (prime bankers') sight	1 10¼@110¼
London, prime commercial	109½@109⅝
Paris, (bankers') long	5.16¼@ 5.15
Paris, (bankers') short	5.13¾@ 5.12½
Antwerp	5.18¾@ 5.17½
Swiss	5.18¾@ 5.17½
Hamburg (bankers')	35½@36¼
Amsterdam (bankers')	41¾@ —
Frankfort (bankers')	41 @41½
Bremen (bankers')	78½@78¾
Berlin (bankers')	72 @72¾

Gold is firm at 141⅞@142. The following is a statement of deposits and coinage at the Branch Mint of the United States, San Francisco, California, during the second quarter of 1867:

Gold deposits	$5,479,319 78
Silver deposits and purchases	71,517 36
Total deposits	$5,550,837 14
Gold coinage, 295,500 pieces	5,805,000 00
Silver coinage, 30,000 pieces	17,193 06
Total No. pieces, 325,500	$ 822,193 06

Copper is very firm, with little offering. The quotation is 25½ for Baltimore, 25¾ for Portage Lake, and 26½ for Detroit, but no large parcels can be bought at these rates. Sales of the last three days, 400,000 lbs. For end of September and October delivery ¾ to ⅞ more is paid. The arrivals from the Lake are very limited. The English market has advanced £5 from the lowest point on the 1st of August.

Tin—Is in good demand. The last sales were 2,500 bxs. Straits, part to arrive, at 24½ and 24¾ gold. To-day 25 is asked. English has advanced to 25¼; Banca, nominal, 26½. In Europe an advance of 3 per cent. has taken place, with a still rising tendency.

Lead—Is firm at 6 55 to 6¾ gold for ordinary foreign.

Spelter—Dull at 6½, gold, for foreign. Domestic is quoted 10¼.

Iron and Steel.—Scotch pig-iron is very quiet, with sales chiefly to supply immediate wants. There is, however, considerable movement at the West. The receipts of iron amounted in the second week of the present month to 5,028,800 lbs., 499,800 lbs. of rails and spikes, and 6,967 tons of ore. The Cable reports: LONDON, August 29—Evening—Iron steady at 53s. per ton.

Petroleum—Is quiet at 12½c. for crude, and 28c. for refined, in bond. The Cable reports: LIVERPOOL, August 29—Evening.—Petroleum, 8½d for spirits, and 1s. 3d. for refined, ANTWERP, August 29—Noon.—Petroleum opened at 44f. per bbl. for standard white.

THE SLATE TRADE.

NEW YORK, August 23, 1867.

Roofing Slate.

The market continues active, and the prospect is that no persons will have cause to complain of the Fall trade, unless it be those who have orders but no slate to fill them. Prices continue firm at about our quotations, and it is believed they will continue so for some time to come.

SALE OF SLATE PROPERTY.—It is stated that the slate quarry, near Slatington, owned by the Hillburn Slate Company of Easton, was recently sold by Mr. G. J. Heninger, to the Northampton Mining Company of New York, for the sum of $30,000. A Pennsylvania exchange complains that the slate region is at present troubled with a gang of roughs, whose chief employment seems to consist in gambling, prize fighting and bullying the quietly disposed citizens.

Vermont purple,	1st	quality, per	square	$11 00@12 00
" "	2d	"	"	10 00@11 00
" green,	1st	"	"	11 50@12 50
" "	2d	"	"	10 50@11 50
" red,	1st	"	"	12 50@13 50
" "	2d	"	"	11 50@12 50
Pa. bl'k & d'k blue,	1st	"	"	10 50@11 50
" "	2d	"	"	9 50@10 50

PRICES DELIVERED. PER SQUARE

On cars or boat at Buffalo	$11 00 per square.
Delivered in Cleveland	12 50 "
" Dayton	13 00 "
" Cincinnati	13 50 "
" Indianapolis	13 50 "
" Chicago	13 50 "
" St. Louis	14 00 "
" Louisville	14 50 "
" Detroit and Toledo	12 75 "

Intermediate, 75 cents per square less.
Red, $4 per square more.
New York Red, same as Purple.
NEW ORLEANS.—$19@20 per square.
CHARLESTON, S. C.—$15@16 per square.

THE COAL TRADE.

NEW YORK, Aug. 30, 1867.

The Scranton sale, which took place on Wednesday last, and at which 75,000 tons of coal were sold, recording an average decline of 40 cents per ton, has totally demoralized the trade. Below will be found a full report of the sale, compared with the sale of July 31st:

August 28. 75,000 tons.		July 31, 75,000 tons.	
LUMP.			
16,000 tons.		16,000 tons.	
1,200 tons	$4 12½	7,800 tons	$4 25
7,800 tons	4 00	6,450 tons	4 50
500 tons	3 90	200 tons	4 37½
1,500 tons	3 80		
5,000 tons	3 75		
STEAMBOAT.			
10,600 tons.		8,000 tons.	
200 tons	$4 12½	5,500 tons	$4 25
1,000 tons	4 00	1,000 tons	4 35
1,200 tons	3 85	600 tons	4 25
4,600 tons	3 80		
2,100 tons	3 75		
900 tons	3 90		
BROKEN.			
15,000 tons.		14,000 tons.	
3,900 tons	$3 85	11,250 tons	$4 25
4,850 tons	3 80	700 tons	4 27½
1,200 tons	3 75	1,950 tons	4 30
5,300 tons	3 95	100 tons	4 37½
200 tons	4 00		
EGG.			
5,000 tons.		8,000 tons.	
100 tons	$4 30	2,500 tons	$4 25
3,800 tons	4 25	1,800 tons	4 27½
1,100 tons	4 37½	3,700 tons	4 30
STOVE.			
19,000 tons.		17,000 tons.	
9,100 tons	$4 40	2,600 tons	$4 37½
6,250 tons	4 42½	1,500 tons	4 40
1,000 tons	4 45	200 tons	4 45
2,650 tons	4 47½	3,950 tons	4 47½
		7,150 tons	4 50
		1,600 tons	4 60
CHESTNUT.			
10,000 tons.		21,000 tons	
200 tons	$3 92½	11,000 tons	$4 00
700 tons	3 90	700 tons	4 02½
2,000 tons	3 80		
450 tons	3 82½		
6,650 tons	3 85		

Ten thousand tons additional were sold to be delivered at Washington, N. J., at the following rates:

Lump	$1 55@1 65
Steamboat	1 90@2 17½
Egg	2 50@2 60
Stove	2 60@2 85
Chestnut	2 10

This is an average decline of 48 cents per ton on lump, 41¼ cents on steamboat, 40 cents on grate; an increase of 3⅛ cents on egg, a decline of 14¼ cents on stove, and 12½ cents on chestnut.

We believe that coal should not be sold at auction, especially on a depressed Fall market, which cannot take the amount offered. Such sales interfere with early contracts. Coal cannot be moved or transported except at great expense, and the profits of the trade are so small that it does not pay to store or hold it. Only when the supply is equal to the demand are fair and remunerative prices obtained and the miner and dealer not starved. That this last decline will drive the Schuylkill carrying companies to a reduction in freights there can be no doubt, and which, when agreed upon, will be to such a point as will place that district fairly in the market and below competition. That a reduction of freights by these companies, at this time of the year, would cause a lack of confidence with "early purchasers" we admit, but believe that circumstances justify this step, and urge the relief of thousands of starving miners with a long winter before them.

The following Table shows the quantity of Coal shipped over the principal roads for the week ending August 24, 1867, compared with that shipped the same time last year.

	1866. WEEK.	1866. TOTAL.	1867. WEEK.	1867. TOTAL.	DECREASE.
Phil. & Reading R.R.	92,712	2,525,490	24,520	2,066,751	458,734
Schuylkill Canal	36,954	851,205	4,468	594,626	256,579
Lehigh Val. R. R	44,026	1,256,741	43,032	1,324,406	67,664
Lehigh Canal	34,098	696,236	24,794	536,134	60,102
Del & Hudson	41,820	819,905	34,348	796,846	23,059
Scranton North	8,155	217,094	10,585	269,076	1,948
Scranton South	22,331	684,024	27,171	833,831	149,807
Penn'a Coal Co. Rail	17,062	198,533	17,819	616,605	418,072
" " Canal	470	14,606	714	12,987	1,619
Wyoming North	.....	.....	.....	.....	.....
Wyoming South	.....	263,152	11,512	177,270	85,882
Shamokin	.....	.....	.....	.....	.....
Trevorton	.....	39,560	55	36,618	2,942
Short Mountain	4,409	53,904	3,638	44,631	2,713
L. V. Co	.....	36,262	2,079	30,990	3,374
Broad Top	.....	173,068	4,754	151,438	21,630
Williamsto'n	2,618	29,290	3,629	62,743	33,453
Total	.....	7,813,070	213,118	7,483,958	.....
1867	.....	7,483,958	.....	.....	.....
Decrease	.....	329,122	.....	.....	.....

Schuylkill Coal Trade.

BY RAILROAD & CANAL, FOR WEEK ENDING AUGUST 30, 1867

	Railroad.	Canal.
St. Clair	30,435	.....
Port Carbon	6,014	.....
Pottsville	525	.....
Schuylkill Haven	12,423	.....
Auburn	3,050	.....
Port Clinton	8,101	.....
Total for week	60,548	16,040
Previously this year	2,066,767	599,610
Total	2,127,315	615,650

Lehigh Coal Trade.

SHIPPED FOR THE WEEK ENDING AUGUST 24, 1867.

SHIPPERS.	CANAL. Week. Tons.	CANAL. Total. Tons.	RAILROAD Week Tons.	RAILROAD Total Tons.
FROM MAUCH CHUNK.				
Lehigh Coal & Navigation Co.	.....	.....	.....	.....
Summit Mines	10,000	187,965	.....	.....
Room Run Mines	.....	1,313	.....	.....
John Laubach & Co.	.....	352	.....	.....
Other Shippers	.....	.....	.....	.....
Total	10,000	189,631	.....	.....
FROM B. M. REGION.				
John Connery	.....	.....	.....	1,534
W. T. Carter & Co. (Coleraine)	275	6,072	1,744	58,283
Spring Mountain Coal Co.	287	1,539	2,385	91,467
Thomas Hull & Co. (N. Y. & Lehigh Co.)	183	6,480	2,898	69,887
Honey Brook Coal Co.	649	19,876	3,103	94,639
German Pennsylvania Coal Co.	92	5,442	546	24,571
Beaver Meadow (D. W.)	.....	.....	58	1,079
Other Shippers	.....	.....	5	112
Total	1,489	39,411	10,742	341,306
FROM MAHANOY REGION.				
McNeal Coal and Iron Co	78	3,454	1,288	64,589
Knickerbocker Anthr. Coal Co.	.....	1,327	1,015	35,212
North Mahany Mines (Mahanoy Col. now B. & C.)	.....	636	.....	10,637
Delano do	.....	1,048	834	33,006
Primrose Mines (Rathbun, Stearns & Co.)	.....	.....	.....	25,625
Walter, Brothers & Co. (now Bedford & Cox)	.....	82	.....	.....
Mount Etna Coal Co.	.....	.....	171	229
Trenton Coal Co.	.....	184	.....	1,609
Glendon Coal Co. (Glendon Colliery)	.....	.....	.....	13,062
Thomas Coal Co.	36	1,222	683	20,472
Williams & Herring	.....	189	.....	8,818
E. S Silliman	.....	.....	2,372	70,219
East Boston	.....	.....	.....	505
New Boston Coal Co.	.....	.....	934	13,027
Shamokin Coal Co.	.....	.....	.....	2,352
Other Shippers	.....	.....	.....	95
Total	163	8,245	7,300	299,468

FROM HAZLETON REGION.				
A. Pardee & Co. (Hazleton)	2,307	42,133	3,683	86 533
G. B. Markle & Co. (Jeddo)	2,532	31,229	2,774	79,175
Wm. S. Halsey & Co. (Mt. Pleasant)	206	2,888	280	4,955
Buck Mountain Coal Co	718	25,662	1,372	33 226
Sharpe, Weiss & Co. (Council Ridge)	1,259	19,003	1,374	49,265
Coxe, Brothers & Co. (Cross Creek)	286	5,984	341	11,670
Ebervale Coal Co	765	21,407	1,873	44,753
Stout Coal Co	385	12,611	1,088	21,011
Harleigh Coal Co	761	10,886	1,107	24,735
Ashburton Coal Co	....	1,423	....	432
East Sugar Loaf	....	....	4,558	86,192
Upper Lehigh C. Co	....	....	....	....
Highland	335	7,751	552	10,960
Mount Hall	....	88	....	311
Other Shippers	....	....	....	10
Total	9,873	188,846	20,199	452,484
FROM WYOMING REGION.				
Newport Coal Co	....	3,533	....	783
Warrior Run Mining Co	....	2,056	750	7,070
Parish & Thomas	187	5,716	1,108	27,765
New Jersey Coal Co	62	4,057	317	11,148
Lehigh & Susquehanna Coal Co	....	2,933	....	11 245
Germania Coal Co	94	5,317	396	10,300
Franklin Coal Co	190	5,567	....	8,763
Audenried Impr'v't & Coal Co	67	4 217	510	6,879
Valley Coal Co	....	189	....	384
Wilkes Barre Coal and Iron Co	1,772	44,044	748	45,877
Baltimore Coal Co	95	12 612	135	28 833
Union Coal Co	....	3,329	....	7,432
Wyoming Coal & Transp'n Co	281	6,037	129	16,308
Everhart Coal Co	....	2,625	....	1,804
Morris & Essex Mutual	....	....	136	5,531
Gl. B. Hillman & Co	....	....	....	6,703
Bowkley, Price & Co	....	....	....	1,745
T. F. Haul & Co	....	....	....	774
John Horton	96	96	....	....
Mineral Springs	251	6,313	....	....
Other Shippers	....	....	....	....
Total	3,200	110,449	4,799	201,149
Grand Total	24,794	536,134	43,032	1,324,406
Total 1866	34,098	596,236	44,026	1,256,741
Decrease	9,304	60,102	994	....
Increase	....	....	....	67,664

RECAPITULATION.

RAILROAD.

	Forwarded East by Rail from Mauch Chunk.	Delivered at M. Chunk, and on line of road at that point.	Total by Rail.	Delivered at P. H. Junction and Mauch Chunk for Canal.	Total by Rail-road and Canal.
	Tons.	Tons.	Tons.	Tons.	Tons.
For the week	43,032	10	43,043	2 618	45,661
Corresponding week last year	44,026	40	44,066	8 544	52,651
Previously this year	1,281,373	12,083	1,293,461	47.785	1,941,246
Total	1,324,406	12,093	1,336,504	50.403	1,383,908
Same time last year	1,256,741	740	1,247,481	175.696	1,433,177
Increase	67,664	11,358	79,023	.....	.....
Decrease	....	.....	.....	125,292	49,268

CANAL.

	Week.	Season.
Total from Mauch Chunk	10,006	189.631
" E. M. Region	1 489	39,411
" From Mahanoy Region	163	8.245
" Hazleton Region	9.560	181,072
" Upper Lehigh Region	573	7,271
" Wyoming Region	3,200	110,499
Total	24.794	536.134
Same time last year	34,098	596,236
Increase	.....	.....
Decrease	9,304	60.102

Lehigh and Mahanoy Coal Trade,

For week ending August 24, 1867.

NAMES OF SHIPPERS.	WEEK.	TOTAL.
Trenton Coal Co	.....	1,794 02
Mount Etna	171 04	214 05
Mahanoy Coal Co	.....	10.782 14
Delano Colliery	854 16	34.195 05
Glendon Coal Co	.....	12,985 12
Rathburn, Stearns & Co	.....	25,431 01
E. S. Silliman	2,372 17	70.854 12
McNeal Coal & Iron Co	1.473 06	67,996 12
Knickerbocker Coal Co	1,107 18	36,682 03
Thomas Coal Co	726 04	21,501 05
Williams & Herring	.....	8,996 08
Shamokin Valley Coal Co	.....	2,352 18
New Boston	984 06	13,028 19
Other shippers	.....	15 11
Total	7,670 11	306,831 10
Corresponding week last year	9,892 01	251 395 16
Increase	.....	55,435 14
Decrease	2.220 10	.....

Cumberland Coal Trade.

For the week ending August 17, 1867.

From the Alleganian.

'COAL TRADE BY RAILROAD.—Statement of Coal shipments over the Baltimore and Ohio Railroad for the week ending August 24, 1867:

From C. and P. R. R.	Tons
Consolidation	1,373 05
American Company	1.424 15
Borden	1,134 11
New Hope	10 15
From Eckart R. R.	Tons.
C. C. and I. C	297 15
Spruce Hill	.....
Blaen Avon	136 08
Total	4,787 09
From George's Creek via Piedmont.	Tons.
George's C. & I. Company	2,997 19
Central do	1,093 10
Atlantic do	453 15
Piedmont do	209 08
Swanton do	305 15
Barton do	1,265 14
Potomac do	1,134 15
George's C M do	469 05
Franklin do	684 00
Hampshire do	1,476 11
Total	8,318 02

In consequence of the break on the Canal, coal shipments have been temporarily suspended, and we therefore have no report.

Wyoming Coal Trade,

By Canal for week ending August 21, 1867.

South	11,512 tons
Previously	165,758 "
Total	177,270 "
To same time 1866	263,152 "
Decrease	85,882 "

Prices of Coal by the Cargo.

[CORRECTED WEEKLY.]

At New York, August 23, 1867.

Schuylkill Red Ash, choice	$5 75@	$6 00
" Ordinary	5 25	5 50
" White Ash Lump	5 25	5 50
" Steamboat	5 25	5 50
" Broken	5 25	5 50
" Egg	5 25	5 50
" Stove	5 25	5 50
" Chestnut	4 00	4 25
Lehigh White Ash Lump	5 75	....
" Broken	5 50	....
" Egg	5 50	....
" Stove	5 75	....
" Chestnut	5 00	....
Wilkesbarre Lump	5 25	....
" Broken & Egg	5 50	....
" Stove	5 50	....
" Chestnut	4 75	....

SPECIAL COALS.

Dealers' Quotations.

Diamond Vein Red Ash, Schuylkill	6 00	....
Locust Dale White Ash, "	5 50	....
Honey Brook " " Lehigh	5 75	....
Harleigh " " "	5 75	....
Spring Mountain " " "	5 75	....
Sugar Creek " " "	5 75	....
Ashburton " " "	5 75	....
Fulton White Ash	5 75	....
Stout "	5 75	....
Old Company's " "	5 75	....
Buck Ridge " " Shamokin	6 00	....
Henry Heils, E. Franklin, Lorberry	6 00	....
New England Red Ash	5 75	....
Broad Mountain	5 50	....
Wyoming	5 40	....
McNeal Co	5 75	....
George's Creek (Balt.)	5 25	....
" " (Georgetown)	5 75	....
Locust Mountain (Repplier)	5 60	....
Duncan Red Ash "	6 50	....
Wilkesbarre Coal & Iron Co	5 50	....
New Burgh Orrell Gas Coal	9 25	....
Despard Gas Coal	9 25	....

Dealers in these Coals may be found in our advertising columns.

At Philadelphia, August 23, 1867.

Lehigh Lump and Steamboat	$5 25@	.. ..
" Broken and Egg	5 25	.. ..
" Stove	5 25	.. ..
" Chestnut	4 00	.. ..
Schuylkill Red Ash Prepared	4 50	4 75
" Chestnut	3 00	.. ..
" White Ash Lump and Steamboat	4 25	.. ..
" Broken	4 25	.. ..
" Egg and Stove	4 25	.. ..
" Chestnut	3 15	.. ..
Locust Mt. Lump, and Steamboat	4 25	.. ..
" Broken	4 25	.. ..
" Prepared	4 25	.. ..
" Chestnut	3 00	.. ..
Lorberry Coal	4 50	.. ..
Shamokin	5 00	.. ..
Franklin, (Lykens Valley)	5 25	.. ..
Broad Top	5 00	.. ..

Scranton Coal at Elizabethport, August 22, 1867.

(Corrected weekly by D. L. & W. R. R. Co.)

Lump	$4 75@	— —
Steamer	4 75	— —
Grate	4 75	— —
Egg	4 75	— —
Stove	5 00	— —
Chestnut	4 50	— —

Prices for Pittston Coal at Newburgh, August 22, 1867.

(Corrected weekly by Penna. Coal Co.)

Lump, per ton of 2240 lbs	$5 05	.. ..
Steamer, " " "	5 15	.. ..
Grate " " "	5 15	.. ..
Egg " " "	5 15	.. ..
Stove " "	5 80	.. ..
Chestnut "	4 25	.. ..

70 cents additional to New York.

Lackawanna at Rondout, August 22, 1867.

(Average contract prices for year.)

Lump	5 00 @	.. ..
Steamer	5 10 @	.. ..
Grate	5 30 @	.. ..
Egg	5 40 @	.. ..
Stove	5 55 @	.. ..
Chestnut	4 60 @	.. ..
Pea	4 00 @	.. ..

Lehigh Coal at Elizabethport, August 22, 1867.

Lump	5 75@	.. ..
Steamboat and Broken	5 50	— —
Egg	5 50	— —
Chestnut	5 00	— —
Stove	5 75	— —

At Baltimore, August 22, 1867.

Wilkesbarre & Pittston W A	$5 25@	— —
Lykens Valley & Sunbury R A	5 50	— —
Shamokin W. or R. A	5 50	— —

George's Creek and Cumberland Coal.

Run of mine, f. o. b. at Locust Point at Georgetown ..... $5 00@ 5 25

Wilkesbarre Coal at Elizabethport, August 21, 1867.

(Corrected by Wilkesbarre Coal & Iron Co.)

Lump	5 00	.. ..
Steamer	5 25	.. ..
Broken	5 25	.. ..
Egg	5 00	.. ..
Stove	5 35	.. ..
Chestnut	4 50	.. ..

Prices of Provincial Coals.

[CORRECTED WEEKLY BY LOUIS J. BELLONI, JR., 43 PINE STREET.]

Duty $1.25 per ton.

Block House (on board)		$2 00	gold
Gowrie "		1 75	"
Lingan "		1 75	"
Sydney "		2 25	"
Pictou "		2 25	"
Little Glace Bay "		1 87½	"
International Co.'s "		1 75	"
Slack Coal, B. H. "		75	"
" L. G. B., "		1 00	"

Prices of Foreign Coals.

Duty $1.25 per ton.

Corrected weekly by PARMELEE BROS., 32 Pine Street, N. Y.

Liverpool Gas Caking	$10 00
" " Cannel	13 00
" House "	16 50
" " Orrel	15 00

Per ton 2240 lbs.

PRICES FROM YARD:

Liverpool Orrell, screened	17 60@ ..
" Cannel, "	20 00@22 00

per ton 2000 lbs. delivered.

Coal Freights.

(Corrected Weekly.)

From Newburgh.

River. Co.'s Boats.		Eastern.	
Albany	50@	Boston	1 80@ .. ..
Barrytown	35	Bridgeport	1 12½ .. ..
Catskill	35	Bristol	1 50 .. ..
Cold Spring	30	Dighton	1 50 .. ..
Coeymans	45	Fall River	1 45 .. ..
Coxsackie	40	Mystic	1 50 .. ..
Fishkill Landing	20	New Haven	1 12½ .. ..
Greenbush	50	New London	1 30 .. ..
Haverstraw	45	Newport	1 45 .. ..
Hudson	35	Norwalk	1 12½ .. ..
New York	70	Norwich	1 40 .. ..
Nyack	50	Pawtucket	1 65 .. ..
Peekskill	40	Providence	1 50 .. ..
Poughkeepsie	25	Stamford	1 12½ .. ..
Rhinebeck	30	Stonington	1 30 .. ..
Saugerties	35	Warren	1 45 .. ..
Sing Sing	50		
Stuyvesant	40		
Tarrytown	50		
Troy	55		
West Point	30		
West Troy	55		
Yonkers	55		

From Elizabethport.

Albany	$1 00@	— —	New London 1 25@ — —
Boston	1 75	1 80	Newport 1 40 — —
Bridgeport	1 00	— —	New York 55 60
Fall River	1 40	— —	Norwalk 1 00 — —
Hartford	1 50	— —	Norwich 1 30 — —
Hudson	1 00	— —	Pawtucket and towing 1 50 — —
Lynn	—	— —	Portland 1 95 — —
Middletown	1 25	— —	Portsmouth 2 15 — —
New Bedford	1 45	— —	Providence 1 40 — —
Newburyport	2 05	— —	Salem 1 80 — —
New Haven	1 00	— —	Taunton 1 40 — —

From Port Richmond, Philadelphia.

Astoria	1 30	— —	New Haven 1 75 — —
Boston	2 00	— —	New London 1 75 — —
" bridges	03	— —	Newport 1 75 — —
Chelsea	2 25	— —	New Bedford 1 75 — —
Charlestown	2 00	— —	Newberryport 2 15 — —
Dighton	1 80	— —	Newark, N. J. 1 15 — —
East Cambridge	2 00	— —	Portsmouth 2 15 2 30
" bridges	03	— —	Portland 2 00 — —
Fall River	1 75	— —	Providence 1 75 — —
Gloucester	2 15	— —	Pawtucket 1 90 — —
Hudson	1 80	— —	Quincy Point 2 00 — —
Hartford	1 50	— —	Roxbury 2 25 — —
Hingham	2 10	— —	Salisbury 2 40 — —
Lynn and dis	2 00	2 05	Salem 2 00 — —
Malden and tow	2 25	— —	Somerset 1 75 — —
Medford	2 03	— —	Troy 1 40 — —
Marblehead	2 00	— —	Thomaston, Me 2 50 — —
New York	1 30	— —	Williamsburg 1 30 — —

From Washington, N. J.

Hackettstown	$	58	Drakesville $ 1 08
Waterloo		81	Dickerson's Basin 1 11
Stanhope		99	Iron Dale 1 18
Port Morris		99	Dover 1 24
Rockaway	1	32	Paterson 1 75
Denville	1	33	Pompton 1 75
Boonton	1	44	Bloomfield 1 85
Little Falls	1	70	Newark 1 90

From Baltimore.

To Philadelphia	$1 40@	— —	Boston 2 25@ 2 50
New York	2 10	— —	Sound Ports 2 25@ 2 50
Washington	1 10	— —	Norfolk 1 00@ — —
Annapolis	75	— —	Richmond 1 30@ — —

From Georgetown or Alexandria.

To Philadelphia	$1 50	— —	Boston 2 75 2 50
New York	2 15	— —	Sound Ports 2 25 2 50

Provincial Freights.

	Currency
Sydney to N. Y.	$3 40
Sydney to Boston	3 00
Lingan	3 50
Lingan to Boston	3 00
Cow Bay	3 25
Cow Bay to Boston	2 87
Cow Bay to Portland	2 50
Big Glace Bay	4 12½
Little "	3 00

Foreign Freights.

New Castle and Ports on Tyne	£17@ keel.
Liverpool	12s 6d@ 15s

Rates of Transportation to Tide Water, June 1, 1867.

PHILADELPHIA & READING RAILROAD.

From Pottsville to Philadelphia	$2 17
" " Port Richmond	2 07
" " New York, drawback off	2 80

SCHUYLKILL NAVIGATION.

From Pottsville to Philadelphia	2 08
" " New York, drawback off	2 88

OTHER AVENUES.

From Mauch Chunk to Philadelphia, Canal, including unloading	1 88
" " Philadelphia, via North Penna Railroad	2 00
" " Elizabethport, via N. J. Central Railroad	2 02
" " Port Johnson	2 10
" " New York	2 03
" " New York via Del. Div. and Raritan Canal, including unloading	2 67
" " New York via Morris Canal	2 39
" " Hoboken via Morris & Essex Railroad	2 10
" " New York	2 20

From Elizabethport to Buffalo, via New York Canal, a distance of about 459 miles—freight, $2 62, toll 78 cents. 3 40

The shipping expenses at Elizabethport and Port Johnson vary from 25 to 30 cents.

Weekly Coal Trade Circular.

NEW YORK, August 30, 1867.

The Coal Trade still continues extremely depressed. The Scranton sale this week developed a further decline in price, the average price realized being the lowest point of the season. If this Coal had been sold at private sale, instead of being forced off at auction without regard to price, it is certain that better figures would have been realized. Readers, we mistake "the signs of the times" another season; the other regions that are now suffering so much as a result of the auction system of coal sales, will not suffer their tonnage to be taken from them without adopting some measures to prevent it.

The retail trade is without any change. The season is rapidly drawing to a close, and there must soon be a change from the present extreme depression of trade, but it will probably come too late to prove very beneficial to the producers of Coal. P.

BOSTON STOCK MARKET.

(By Telegraph.)

BOSTON, August 30, 1867.

Prices bid to-day were as follows:

Allouez	8	Huron	—
Calumet	24	Isle Royal	1
Hecla	20	Minnesota	6
Canada	—	Quincy	22
Copper Falls	25½	Cary Improvement	7¼
Franklin	17½	Rockland	—
Hancock	—	Boston Water Power	19¼

Sales at Boston Stock Exchange, August 22.

50	Shs Water Power	19¾	50	do	Copper Falls 26
100	do do	s30. 19¼	50	do	do 25¾
400	do do	s30. 19¼	100	do	do b.60 20¾
100	do do	b. 30 19¾	100	do	Cary Improvement 7¾
					SECOND CALL.
200	do Allouez	8¼	400	do	Allouez 8
300	do Phenix	3			

SAN FRANCISCO STOCK MARKET.

(By Telegraph.)

SAN FRANCISCO, August 24, 1867

Mining stocks are active at irregular rates.

Savage	$1,500	Halo & Norcross	$3 000
Gould & Curry	600	Crown Point	1 200
Yellow Jacket	910	Legal tenders	71¾@72¼

FOREIGN MARKET REVIEW.

Metal Report.

LONDON, E. C., August 13, 1867.

We have to report a slight improvement in the position of the Metal market, and though prices as yet do not show any marked advance the tone is firmer, and the prospects encouraging for the future.

IRON.—The position of Welsh and Staffordshire remains unchanged, and orders are by no means plentiful. Scotch pig-iron has undergone no change, closing at 53s. cash.

COPPER.—A better feeling has come over the market, owing to warlike advices from Chili; holders are not pressing sellers, and in some instances an advance of one to two pounds has been established, £77 paid for tough, and £80 refused for sheets. Business reported in Burra at £84. Wallaroo, at £82 10s. Chili bars in Liverpool, £69 10s. to £70, buyers. Ore sold at 14s. 3d.; most holders ask 15s.

TIN.—Straits, after a few transactions at £85 17s. cash, the price has rallied to £86 10s. cash. At which price, however, there are now sellers. Banca, £91 nominally. English tin, steady. The Dutch market has relapsed to £92.

TIN PLATES.—Very steady demand; prices well maintained.

LEAD.—Very quiet; good soft English pig £19 15s.

SPELTER.—Transactions have been confined to a few small lots on the spot, from £20 17s. 6d. to £21. The latter price is now firmly demanded. Specials, in outports, £21. W.H. £21 2s. 6d. VON DADELZEN AND NORTH.

London Copper Trade Circular.

LONDON, August 17, 1867.

There has been more business doing, and the advanced prices asked have been more readily paid. Some of the English smelters have shown themselves desirous of being provided with furnace material, rather than being found short of stock in the present unsettled state of the market. The principal transactions in Chili produce since our last have been about 1,000 tons of ores, at 13s. 10d. to 14s. per unit; 600 tons of regulus, at the latter figure; and 150 tons of bars, at £65 10s. and £69 per ton. For bars, £69 10s. is now asked, and for ores and regulus, 14s. 3d. per unit. In English copper the transactions have not been large, and quotations are wide, as "spot" can be had at a difference of £2 per ton less, in some instances, than forward delivery. Business is limited in fine foreign, at previous rates, which were already higher in proportion than English. The mail from Chili brings advices of about 1,700 tons of copper produce having been chartered for, half in bars and the remainder in ores and regulus, with a list of sales amounting to nearly the same quantity of fine copper, prices in Valparaiso having slightly improved, and freights being rather higher. The general feeling in the market here is better, and the tendency on the part of holders of copper (who can conveniently do so) is to keep it at present, in the hope of a further improvement being established.

VIVIAN, YOUNGER & BOND.

AMERICAN

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WESTERN & COMPANY,
EDITORS AND PROPRIETORS.

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☞ Correspondents, exchanges and others addressing us should be *extremely careful* to write "JOURNAL OF MINING," instead of "MINING JOURNAL," to ensure safe carriage. Communications intended for publication should be plainly written, and on one side of the paper only.

NEW YORK, SATURDAY, AUGUST 31.

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IDEAL CHEMISTRY.

SIR BENJAMIN C. BRODIE, Bart., F. R. S., in a paper, read before the Royal Society in May, 1866, suggested a "method for the investigation, by means of symbols, of the laws of the distribution of weight in chemical change," to which he gave the name of a "Calculus of Chemical Operations." At a meeting of the Chemical Society, June 6, 1867, the same subject was presented by him in the form of a lecture "On the Mode of Representation afforded by the Chemical Calculus, as contrasted with the Atomic Theory." SIR BENJAMIN BRODIE'S high reputation, to say nothing of his position as Professor of Chemistry in the University of Oxford, is sufficient to lend great influence to his utterances on any subject; but the nature of this new symbolism (and, to a certain extent, new hypothesis) is so extraordinary as to produce a remarkable effect, even without the sanction of a great name. On both occasions, the communication was received with great attention but little discussion. It was—to use an inelegant expression, justified by its literal accuracy—a "stunner." We confess that we share in the general dazed admiration of the new Calculus, which the enthusiastic *Chemical News* announces, in different articles, as "Ideal Chemistry," and "The Chemistry of the Future." In another column will be found the condensed statement presented by that journal, which we give, regretting that we cannot republish its extended report of the lecture itself. The abstruse nature of the subject would, perhaps, exclude it from our columns altogether, but that it marks an epoch in the history of Chemistry, possibly not inferior in importance to that inaugurated by Dalton's theory of Atoms.

The Atomic Theory, like all other hypotheses invented to account for observed phenomena, has suffered many modifications. The schools of the Atomists are almost as numerous as the philosophers themselves. Some acknowledge the purely hypothetical nature of their theory; others assume the existence of atoms to be proved; and others still, like the bold and acute author of "Atomechanics," ranking the atoms as established facts, go back of them, and seek to explain them by a theory of "pantogen" and "panatoms"—the hypothesis of a hypothesis. We are not now discussing the probability of this last theory; nor do we mean to express our opinion in any way concerning it; since that topic must be reserved for a separate discussion. We only allude to it as the extremest form of the atomic philosophy, and, as such, the antipodes of Sir BENJAMIN BRODIE'S view, which is a rebellion against that philosophy *in toto*.

The opponents of the atomic theory have long been aware that the present symbolism of chemistry is essentially atomic. Whether we use that word, or carefully avoid it, speaking only of chemical equivalents, the result is the same. So long as HO, or anything like it, stands for water, so long water will be conceived as the union by addition of heterogeneous bodies; and the atomic conception has a firm hold on the very language of its opponents. Its convenience gives it, so to speak, an unfair advantage. The chemical calculus is an attempt to get rid of this arbitrary rule; and we welcome it, not because we feel sure it will be more practically useful than the atomic notation; but because it will serve to remind us all of the difference between systems, which are never true, and facts, which are always true. Systems are telescopes, the truth is in the sun; and no man should use his particular glass so much as to forget that it cannot reveal to him absolutely nor completely that which he contemplates. We may illustrate this by referring to a very familiar conventional system—the decimal notation. Most people seem unable to distinguish the inherent properties of numbers from those apparent properties with which our arbitrary notation clothes them. The number nine, for instance, is said to have certain remarkable attributes; but, in fact, these belong entirely to the position which that number occupies in the decimal notation. Employ the old Roman system, and the mysterious properties of nine vanish; employ a system similar to the decimal, but having eight for a basis instead of ten, and the properties of nine become in a jiffy the property of seven. Thus we see that, while the system is very convenient, and uniformity in its use is quite desirable, for ordinary purposes, it does not present the whole truth, and it confuses sometimes the truth it does present. Just so in chemistry; the atomic nomenclature is highly convenient and useful; but it should not become a chain upon thought, nor a tyrant over observation. We have said that the chemical calculus is a rebellion against the atomic philosophy. Strictly speaking, it neither affirms nor denies the atoms; it ignores them. It is not inconsistent with the hypothesis of atoms, but independent of it. It is a rebellion like that of the American Colonies, who, after their separate rights were once acknowledged, could afford to live at peace with Great Britain.

The inventor of the calculus has already employed it to evolve some remarkable conclusions. One is the classification of the elements now known into indivisible, (mercury and hydrogen,) double, (oxygen, sulphur, etc.,) and complex elements (chlorine, nitrogen and many others.) The possibility that the latter may be reduced by science is hinted; but the possibility of their existence, in remote time or space, in simple forms, is insisted upon. The basis of the system is an arbitrary unit of space, an arbitrary temperature and pressure, and an arbitrary selection of the unit of hydrogen as the modulus. Yet every mathematician will understand that the clearly hypothetical assumption of these elements of the calculus is a great safeguard against the danger of "realizing" the symbolism. It is hardly possible to abuse this system of expression in the same way as the atomic system is abused.

PROFITABLE MINING.

We clip from an exchange the following:

"The mines at La Motte, in Missouri, have been worked for upward of a hundred and forty years, and yet there is no perceptible diminution of the yield. Since March, 1862, 62,000 pigs of lead have been made, averaging 70 pounds to the pig. Fifty miners are now producing 9,000 pounds per day. In eighteen months, parties cleared $60,000 from a space 38 feet wide by 52 feet long. Over $200,000 worth of nickel ore has been taken from a space 30 feet wide and 100 feet long; and in boring recently, a quarter of a mile farther South, on this same lode, a vein of solid nickel two feet thick was struck just below a bed of plumbago."

"Solid nickel" is good! Can it be that mine La Motte, in addition to its other stupenduous treasures, contains a sedimentary deposit of meteorites? We must be allowed to hesitate. Let our Missouri friends first prove their tin, before proceeding to discover nickel. It is evident that they mean to find, sooner or later, everything that anybody ever found anywhere. We can only say: Be sure you're right, then go ahead!

EDITORIAL CORRESPONDENCE.

BURLINGTON, Vt., Aug. 27, 1867.

The sixteenth annual meeting of the American Association for the Advancement of Science is over; and we may look back upon it, with the view of measuring its importance and consequences. There is a general feeling that this is a critical period in the history of the Association. Disorganized by the war, and somewhat weakened by the establishment of the National Academy, the Association can only be preserved by the enthusiasm and activity of its individual members. The tokens of the Burlington meeting are therefore peculiarly significant, and the choice of officers and place of meeting for next year, carries with it, in no mean degree, the fate of the Association. Such being the case, every friend of science must rejoice that the omens thus afforded of the future, are thoroughly favorable. The flight of the birds is not dubious, and the poorest augur would risk nothing in declaring all the signs propitious. The meeting itself, though not very large, was still respectable in point of numbers; and what it lacked was made up in eagerness and interest. The different sections were obliged to choke off discussions, to condense papers, and to adopt various means for the completion of all business within the time set. Of the numerous papers presented, many were highly novel, original and important. Among these we may mention the communications of DAWSON, NEWBERRY, VERRILL, and MARSH, as surpassing in interest the ordinary productions of such occasions. The palæontological feast spread by DAWSON and NEWBERRY, in particular, will never be forgotten by those who were privileged to partake of it. These gentlemen deserve the highest credit for undertaking the risk and trouble of transporting fragile and valuable specimens from distant points, in order to illustrate to their assembled co-laborers the discoveries they had made. T e were also many papers of interest on local geological phenomena, such as those of WORTHEN, HALL, HITCHCOCK, VOSE, PERRY, and others. A large number of papers dealt with the laws of physics and chemistry, such as the contributions of PIERCE on Vibrations, LOVERING on Sound, and HUNGERFORD on the Regulation of Snow. Astronomical papers were not wanting; and the youthful NEWCOMB made his mark anew, as a wonderful observer and mathematician, while Dr. B. A. GOULD was just what he always is, fascinating, brilliant, acute, but careless and indifferent, apparently, to his own gifts—one of the best talkers in the Association, but far better as a writer. It is a pity that his charming talk on telegraphy, astronomy, etc., are left to be recorded by pens too clumsy to do them justice. Next year, he is to deliver a memorial address on the life and character of Prof. BACHE; and if it is equal in elegance and force to that which he pronounced before the Academy, on GILLISS, it will be worthy of the subject, the occasion and the man. We will not continue to enumerate the various sorts of papers which crowded before this meeting, only referring in addition to the extremely interesting paper of MORGAN, on Beaver-dams, which dispelled a good deal of the popular romantic delusion concerning the habits of the American Beaver, while it left, at the same time, ample proofs of the sagacious instinct of the animal. Very few papers passed without more or less discussion, until the time became too limited. The glacial question was getting very warm at one time, when it was adjourned for a separate discussion, which, in the press and excitement of other matters, it never received. There is no harm in, that. Very little good can be done just now by discussion of that question. What we want is active and careful field-work. Our young geologists should see glacial striations, and ice berg marks, and sea-beaches, and moraines, as things, which are to be kept as facts unclassified, and described as such, until the time shall come to deduce from pure observations the true and general law. Until then, debate as to what might have been, or could not possibly have been, is premature and useless. Hitchcock's opinions on various points connected with the geology of Maine and Vermont, are vigorously disputed; and only the waning hours of the last day saved him from a pitched battle, which he was, perhaps, not loth to undertake. In the mathematical and physical section, Prof. Hungerford's experiments on the transformation of snow into ice by mere pressure, attracted attention, as, if they are confirmed, they will settle the point that glacier ice may be formed, without the alternate freezing and thawing which some writers deem necessary. Another point of interest brought up at this meeting was the question of international coinage, discussed more especially in the able paper of Mr. E. B. Elliot, of Washington, from which it was evident that the French coinage, proposed as a standard for ours, is neither in itself so convenient, nor so closely allied to the metrical system of weights and measures. The feeling of the Association, in favor of the present monetary, mint of the United States, found utterance at last in a resolution, unanimously passed, which expresses a desire for the introduction of metrical weights and measures, but protests against any rash and hasty change of the weight or fineness of the American gold dollar. It is evidently the general opinion that France is asking too much in demanding that we debase our coinage, while she makes no concession whatever, except to promise to strike a new twenty-five-franc piece, corresponding to our half-eagle.

Much more might be said of the peculiar and interesting features of the meeting; but enough has been described to show that it was not a dull, heavy affair, but teemed with life from beginning to end. The hospitality shown by the citizens of Burlington was also a matter for congratulation. The delightful excursion across Lake Champlain, to the gorge of the Au Sable, and the excursion, still to come off, to Mount Mansfield, the highest peak of the Green Mountains, are both parts of the general and unfailing courtesy and cordiality with which the Association has been received. Other towns are vying for the honor of its presence in future. Salem, Mass., the most enthusiastic for science of all the cities of America, bespeaks that honor two years in advance; for the claims of the great West are vigorously pushed, and Chicago is chosen for the next meeting. Two things are certain, then: the members are active, zealous and sanguine, and the people are fully aroused to the importance of the American Association; and, between the two, it never was further from dying than it is this minute. How it with the National Academy? That illustrious body must suffer a speedy change of plan, or its dissolution is inevitable. The peripatetic feature must be given up; the practice of reading papers before a society so limited, as hardly to afford an appreciative listener besides the orator in, any one speciality, had better be abandoned too, we think; especially as these able but often abstruse papers have at present but a remote chance of publication. The Academy should hold its meetings always at Washington, be supported directly by the United States government, assist the government in all matters where the aid of science is required, and

by holding its standard of membership very high, strive to make the title of Academician, the goal of the ambition of scientific men—the reward bestowed upon great achievements. More than this, it cannot do. The notion, once entertained by some, that a company of fifty men can comprise all the eminent *savans* of the country, is preposterous; the notion that it can take the place of a large, voluntary, working Association, is still more absurd. There need be no rivalry between the two, since there is a sphere for each. If the smaller body unwisely attempts such rivalry, there can be little doubt that numbers and young blood will win the day. No one was more active in the revival of the Association than the late President of the Academy, and the choice of Dr. B. A. Gould by the Association as its next President, is proof that on that side there is no inclination to any other contest than the generous emulation of co-laborers in a great cause. Let us all rejoice that the future of an organization possessing such an honorable history, is so full of brightest promise.—R.

Record of the Boring of the White Sulphur Artesian Well at Terra Haute, Indiana.

All geologists know how valuable is the record of experience derived from journals of Artesian borings; and we have all had abundant reason to regret that this matter is so often neglected in our own country. In many localities where oil has been obtained, the lack of records of boring renders every new enterprise as uncertain as its earliest predecessors; while, from the immense activity of the last five years in American artesian boring, science has hardly gathered a single trustworthy result. The art of boring has been much improved. We now use more successfully the old Chinese method of "cable-tools," than Europe uses her modern varieties of "pole-tools." But the disclosures of our deep wells have been meagre indeed; and for that process of science which discovers, by the comparison of innumerable observations, the law hidden in every one, there is almost no material at hand. We copy from the Terre Haute *Express* the following record of an artesian boring in Indiana, as an honorable exception to the general carelessness, and one which, we hope, will find imitators.

RECORD.

	Feet.	Inch.
Sand and gravel, first	150	
Fire clay	1	6
Brown Slate	2	
Soapstone	11	
Coal	4	00
Fireclay	3	6
Limestone	2	1
Fire clay	3	2
Brown limestone	2	
Soapstone	1	6
Coal		6
Fire clay	3	2
Salt water—Blue hard limestone	2	6
Hard pan	8	6
Soapstone	10	5
Coal	2	00
Fire clay	3	
Sandstone	1	
Blue limestone	2	4
Dark blue rock	2	6
White sandstone	3	
Fire clay	5	
Shale	2	4
Soapstone	2	
Blue limestone	5	2
Soapstone	5	
Black shale	4	
Blue sandstone	6	
Black shale	2	
Fire clay	5	
Gray sand stone	10	
Coal		9
Fire clay	2	5
Blue rock	3	4
Black shale	3	
Fire clay	2	3
Limestone	4	
Fire clay	5	10
Limestone	3	6
Coal	2	6
Fire clay	1	
Blue sandstone	27	
Slate	9	
White sandstone	8	
Blue sandstone	29	1
Slate	36	2½
Sandstone	1	7½
Blue slate	15	9
White slate	10	2
Salt water—White sandstone	35	11½
Soapstone	43	
Blue slate	28	7½
White slate	7	7
Hard sandstone	23	9
Hard black stone	9	6
White slate	12	
More salt water and gas—Hard sand rock	127	½
White limestone	4	4
White fire clay	3	3
White limestone	30	
Hard grey sandstone	10	
Blue limestone	6	11
Hard white sandstone		9
Hard blue sandstone	3	6
Blue clay	3	
Hard gray sandstone	2	3½
Hard blue limestone	3	3
Hard sandstone	110	5
Soft sandstone	7	3
Blue slate	5	
Blue hard sandstone	411	2
Blue soapstone	34	10
White grit sandstone	117	2
Hard blue slate	48	
Brown sandstone	89	11
White coarse sandstone	10	9
Dark sandstone	6	9
Yellow sandstone	44	2
Hard flint	15	8
Clay limestone or shale	70	2

840 feet, show of oil,
1276 " 9 inches, lubricating oil,
1335 " vein of fresh water,
1629 " 10 inches, oil vein,
1658 " blue sulphur water,
1710 " white sulphur water,
1768 " more white sulph. water,
1785 " large flow of white sulphur water.

OBITUARY—PROF. FARADAY.

A cable dispatch announces the death of this distinguished *savant*. Michael Faraday was born in London, in 1794. The son of a smith, he received but litile instruction in his youth, and was apprenticed to a bookbinder. His tastes, however, soon led him to the almost exclusive study of books, the construction of machines, and the performance of chemical experiments; and hearing a course of lectures by Sir Humphry Davy, in 1812, he requested his assistance to enable him "to escape from trade and enter into the service of science." Davy received the application favorably, and in March, 1813, appointed Faraday chemical assistant in the laboratory of the Royal Institution. In the autumn of the same year, Faraday, as Secretary and Scientific Assistant, accompanied Davy in travelling, their journeys continuing till April, 1815. He then returned to the Royal Institution, with which he remained to the last, becoming Professor of Chemistry, in 1833. Professor Faraday's scientific pursuits are of historical record. He was early interested in electrical researches, assisting Davy, in 1820, in prosecuting those first entered upon by Oersted on the relations of electricity and magnetism. Among popular lecturers, as among original experimenters, he held the highest rank. Few scientific men received so many distinctions from learned societies and institutions. The Queen of England allotted to him, in 1858, a residence at Hampton Court, and since 1835 he has received a pension of £300. Prof. Faraday's death occurred in London.

JOSIAH O. STEARNS.—Superintendent of the New Jersey Central Railroad, died at Elizabethport, N. J., on the morning of Thursday, Aug. 29.

MEETINGS.

Ophir Mining Company, at the office of Chas. Barritt, No. 2 Doane street, Boston, Sept. 3d, 2 P.M.; Coal Bluff Mining Company, at Pittsburgh, Pa., Sept. 4th, 2 P.M.; Briggs Gold Company at 81 John street, Sept. 5th; Union Coal Company, at 220 Walnut street, Philadelphia, Sept. 10th; New York and California Mining Company, at No. 2 Murray street, September 4th; Mingo Coal Company, at Pittsburgh, Pa., Sept. 2d, at 3 P. M.

DIVIDENDS.

Hamilton Gold and Silver Mining Company will pay September coupon bonds subscribed in New York, at the office of Thomas Barclay, No. 4 Wall street, and on all others, at 430 Walnut street, Philadelphia; Sensenderfer Mining Company of California, 1 per cent. for July, payable August 30th; Locust Mountain Coal and Iron Company, at Philadelphia, 4 per cent., due August 26th; Timoke Mining Company, at 10 Milk street, Boston, 10 per cent., payable Sept. 2d.

Scientific Meetings.

AMERICAN ASSOCIATION FOR THE ADVANCEMENT OF SCIENCE.

FIRST DAY.—The sixth annual meeting of this body opened last Thursday week, in the City Hall, at Burlington, Vermont, with a large attendance, and every indication of an important and interesting session. In the absence of Prof. Barnard, the meeting was called to order by Prof. Lovering, of Cambridge, Permanent Secretary of the Association, who introduced Prof. J. S. Newberry, of New York, President. Prayer was then offered by Prof. M. H. Buckham, of the University of Vermont. The Hon. Torry E. Wales, Mayor of the city, then briefly welcomed the Association to Burlington. A letter was read from Prof. Wolcott Gibbs, Vice-President, regretting his inability to be present. The following standing committee was elected by ballot: Prof. Caswell, of Brown University; Dr. B. A. Gould, of Cambridge; G. W. Hough, of Albany; Professor Coffin, Professor E. N. Horsford, of Cambridge, and President Angell, of Burlington. Professor Lovering exhibited a beautiful apparatus for making sound visible. A gas flame is fed by gas passing through a box, of which one side is of rubber, which rubber is connected with an organ pipe. When the pipe is made to sound a musical note, the vibrations of the sound are communicated to the rubber partition and thence to the gas, the flame of which now becomes intermittent. Thus the flame vibrates in unison with the sound. But these vibrations, amounting as they may to hundreds in a second, the number depending on the pitch of the sound, are invisible to the eye, and when we look directly at the flame it seems perfectly steady. But let us look at the flame in a rapidly revolving mirror. As the mirror revolves, the flame seems to move, and, if the motion is rapid, the flame, owing to the persistence of the impression upon the eye, seems drawn out like a ribbon. If the flame is not vibrating, the edges of this ribbon are smooth. But now sound the organ pipe. Instantly the upper edge is cut up with notches, giving it the appearance of a saw, with very deep teeth. The number of these teeth depend upon the pitch of the sound, being greater as the pitch is higher. The Professor then explained the number of applications of his apparatus. The relative velocities of different classes of vibrations given by theory were verified. He showed that two pipes of exactly the same pitch, when placed side by side, tended to silence each other, the vibration of the one rising while falling in the other. Why the two pipes should thus act in antagonism rather than unison, neither Professor Lovering nor his compeers were able to tell. The discussion following the paper brought out many interesting facts in acoustics. The second paper was by Prof. Simon Newcomb, of the United States Naval Observatory, entitled, "A New Determination of the Distance of the Sun." The author described the different methods heretofore used in this computation. The method which he had adopted was the comparison of the results obtained by simultaneous observations on the declination of Mars, made in both hemispheres. He found by this method the distance of the sun to be 92,340,000 miles, with a probable error of 100,000 miles. He also found the velocity of light to be 185,500 miles per second. In this connection Dr. B. A. Gould paid a fitting tribute to the energy and ability shown by Capt. Gilliss of the United States navy, in astronomical investigations. Prof. C. S. Lyman, of New Haven, exhibited and explained a simple and ingenious instrument constructed by himself, for illustrating the theory of waves. The fourth paper was by Col. Charles Whittlesey, of Cleveland, Ohio, on the distribution of precious metals in the United States, by means of colored maps; he represented the gold and silver region of the West in an attractive manner. Prof. Newberry also added some facts gathered in his own travels in this region, and advocated the formation of a National Mining Bureau. The last paper was by Prof. E. N. Hosford, of Cambridge, on "The Theories of Boussingault and Thenard of Stale and Freshened Bread." The experiments of Prof. Hosford show that bread is composed of gluten and starch, and that bread becomes stale by the gluten absorbing all the moisture, and then it becomes fresh by the application of heat, which drives the moisture from the gluten.

SECOND DAY.—The attendance was large, and about 100 members were registered. Remarks were made by Mr. E. B. Elliot, of Washington, on the relative value of gold and silver coin for a series of years. Remarks were made on the same subject by Profs. Caswell, Hillgard, Whittlesey, and Newberry. Prof. James Hall presented a paper on the geological relations of the mastodon and fossil elephant of North America, which subject was discussed by many others. The Association elected Mr. Dawson, of McGill College, Montreal, Chairman. Adjourned until afternoon.

THIRD DAY.—Dr. Gould gave a very interesting account of his experiments on the Atlantic cables, for determining the velocity of signals. Prof. Horsford discoursed on the structure of ice. In the afternoon the Association assembled in two sections—one for mathematics and physics, the other for natural history and geology. This division was preserved for most of the remaining sessions. In section A, Prof. Hungerford's account of experiments on the transformation of snow into ice by simple pressure, attracted considerable interest. It was calculated to throw new light on the formation of glaciers. Section B was favored with remarkable exhibitions of new and important fossils, illustrating the geological papers of Prof. Newberry and Principal Dawson. In the evening, the Association and many citizens of Burlington, listened to an admirable address by Prof. Newberry, the President, on Modern Scientific Investigation, its Methods and Tendencies.

FOURTH DAY.—Saturday was mainly devoted to an excursion on Lake Champlain, and a visit to the gorge and falls of Au Sable, at the courteous invitation of the Champlain Transportation Company. After a delightful day, the Association met in the evening, when various papers of interest were presented, notably one on beaver dams, by L. H. Morgan, of Rochester, who has closely studied the subject.

FIFTH DAY.—Monday being the last day of the meeting, was crowded with work. Many interesting subjects were presented; among them the late discovery of tin in Missouri, which received a lively debate. A committee of nine was appointed to consider the nomenclature of zoology, and, if possible, to establish some rules for the guidance of that profession. The committee are as follows, being taken as representatives from many different localities and institutions of learning: Dana, of Yale; Wyman, of Harvard; Baird, of the Smithsonian; Leidy, of Philadelphia; Newberry, of Columbia; Dawson, of Montreal; Stimson, of Chicago; Scudder, of Boston, and Putnam, of the Essex Institute, Salem, Mass. In the evening, at the general meeting, votes of thanks were offered to everybody who had been kind to the Association, including officials, citizens of Burlington, railroad and steamboat companies. Resolutions were unanimously passed, and ordered to be sent to the proper Government officials, reaffirming the sympathy of the Association with efforts to introduce the metrical system of weights and measures in America; but at the same time protesting against the rash alteration of weight or fineness of our monetary unit, the gold dollar. The officers for the next meeting were elected as follows: President, Dr. B. A. Gould; Vice-President, Col. Whittlesey; Permanent Secretary, Prof. Lovering; General Secretary, Prof. Alfred Rockwell; Treasurer, Dr. Elwin. Dr. Gould was requested to prepare and deliver at the next meeting, a eulogy on the late Prof. Bache. The meeting then adjourned, after fixing the next meeting for the first Wednesday of August, in Chicago. During the evening, the members of the Association attended a delightful levee at the house of Dr. Hickok, of Burlington, and on the following day a company of the members accepted the cordial invitation of Mr. W. H. H. Bingham, of the Mansfield House, at Stowe, and enjoyed a charming excursion, including the ascent of Mt. Mansfield, a night on the summit, and a thorough experience of the excellent hotels, stages, guides, horses, etc., which makes this a favorite watering-place.

Important Experiments with Safety Lamps

On Wednesday and Thursday some highly important experiments, for the purpose of testing the relative value of the different kind of safety-lamps in use, when exposed to a current of air and explosive gas, took place at the Barnsley Gas Works, and were conducted by Mr. Hutchinson, the manager, and Mr. Wilson, the steward of the Darfield Main Colliery. There was a considerable attendance on both days of viewers and proprietors, and the results were of a rather extraordinary character. For the purpose of the experiments a rectangular box, about 12ft. long, 11in. by 4 inside, was attached to the flue of the retort-house chimney, the draft being three-tenths of an inch, as indicated by the water-guage, and by the anemometer was found to travel at the rate of five miles an hour when regulated by a damper. Inside the box was a glass sight-hole, opposite to which the lamp to be tested was placed. When all was in readiness a stream of gas was allowed to flow into the end of the box sufficient to surround the lamp with an explosive atmosphere. The different lamps were then tested with the following results:—The Davy lamp with the shield on the outside, exploded the gas in six seconds, and with the shield inside the gauze in nine seconds. The Belgian lamp exploded in ten seconds; the Mozard in ten seconds; the small Clanny in seven seconds, and the large ditto in ten seconds; and the Stephenson in seventy-five seconds. The Stephenson is consequently the best, the glass cracking before going off. It will thus be seen that none of the so-called safety lamps can be depended upon when coming in contact with a strong explosive current of fire-damp and air, but are in reality mere indicators of danger, it being clearly demonstrated that all lamps will explode when the mixture is sufficiently strong. No doubt the subject will shortly be more thoroughly ventilated, as it deserves to be. One thing, however, is certain, not so much faith as heretofore will be placed in the best of safety lamps. —*London Colliery Guardian.*

New Process for Reducing Ores.

The Dutch Flat (Cal.) *Inquirer* thus refers to the process for reducing ore discovered by Dr. A. T. Dozier, of that place: "The process is easy, rapid, and attended with a completeness not attained, we believe, by any process now in use. The essential features of the process consist in mixing with the ores certain chemical agents, bringing and holding the mass at a low red heat, until the affinities forming the metalliferous compound are destroyed. The mass becomes a stiff paste, and on cooling resembles scoria. The metals, silver, copper, lead, composing the ore, take on a globular form, and remain to a great degree separate in the mass, not forming an alloy. The copper appears in an oxydized granulated form. The paste on cooling becomes exceedingly brittle, is easily reduced to powder; the silex and non-metalliferous portion being washed away, leaves the silver, gold, copper, etc, in seperate masses to be collected. Experiments were made on Camanche ore, from Mono, and on Ophia and Reese River ore. These ores are compounds of gold, silver, and copper. The ore from the Camanche has, we believe, baffled all attempts to reduce it. It is shipped, we are informed, to San Francisco, at an expense of $30 per ton, is sent to Swansea for reduction with returns in gold, silver and copper of about $1,000 per ton. Two experiments were made on this ore with most marked and satisfactory results. On pulverizing the brittle mass in a mortar, and washing away the earthy residuum, about eighty per cent. of the silver contained in the ore in a nearly pure metallic form, was obtained. The remaining portion of the silver with a trace of gold remained unseparated with the copper. The copper being in an oxydized granulated form. The copper, with the gold and silver unseparated from it, can be run into bars and its fineness determined. The silver obtained pure can also be run into bars. The object of the experiments was not to determine the relative value of the gold, silver and copper in a given quantity of ore, but to show that the Camanche ore, and indeed all ores, can, by the process of Dr. Dozier, for all the practical purposes of commerce, be reduced at the mine, and in some cases the metals can be obtained seperately and, he belives, at a greatly reduced cost compared with any processes now in use, and to a far higher degree of perfection. The utility of his process as a valuable discovery in the reduction of ores he is ready to demonstrate on any scale required. While so many of the richest ores in silver, copper, gold, or other metals, remain comparatively valueless, oweing to the

imperfect processes used in their reduction, a process so simple, so complete, and so easily tested, and likely to prove of so great utility to mining industry, is certainly entitled to careful consideration, and should be subjected to a practical demonstration.

The Mineral Wealth of Great Britain—Statistics for 1866.

We are favored, says the London *Iron Trade Circular*, with the sheets of the "Mineral Statistics" for 1866, which will, in a few days, be issued from the Mining Record Office in the Museum of Practical Geology. In the "notice" by Sir Roderick Murchison, the Director-General, which introduces the labors of Mr. Robert Hunt, especial attention is drawn to "the continual increase in the production of coal, notwithstanding the depression which has been felt throughout the year in many manufactures, and especially in that of iron." This is really a point worthy of close attention. The quantity of coals produced in each of the last four years has been as follows:

	Tons.		Tons.
1863	88,292,515		
1864	92,787,873	Increase	4,495,358
1865	93,150,587	"	5,127,145
1866	101,630,543	"	3,479,956

We find upon examination that our exportation of coals in 1866 was 782,631 tons in excess of that of 1865. We have therefore to account for two million and a half tons, which have been consumed in this country during a period of extreme manufacturing depression, in excess of the consumption of the previous year. These returns inform us that there was a falling off in the manufacture of pig iron to the extent of more than 290,000 tons, the production of which would have consumed nearly a million tons of coal. We find, however, upon examination, that there has been a uniformly increased consumption of coals over every part of the country, all the returns of "railway distribution" being considerably in excess of former years. To our steadily increasing population, and to the enlarged means of a great majority of the people, enabling them to enjoy more of the comforts of life, may be referred this increase in the consumption of coal at a period when manufacturing depression would lead us to expect a contrary result. The large quantity of coal raised in 1866 was obtained from 3,188 collieries, and the great development of coal mining in this kingdom is shown by the fact that in 1856 there were but 2,815 collieries in active operation.

IRON.—The quantity of iron ore produced in this country last year was 9,665,012 tons. This was smelted in 613 blast furnaces, and of pig iron we produced:

	Tons.
In England	2,576,928
In Wales	959,123
In Scotland	994,000
Total of Great Britain	4,530,051

Of this pig iron we exported 497,138 tons, reserving more than four million tons for conversion into merchant iron. These returns inform us that there were 256 ironworks in activity in 1866, in which there were 6,239 puddling furnaces and 826 rolling mills.

The proportion in which the iron ores of this country were used in our furnaces is given as follows:

Argillaceous and black band carbonates	42 per cent.
Cleveland stone	28 "
Lancashire and Cumberland red ores	15 "
Brown ores	13 "
Spathic carbonates	2 "
	100

TIN.—The year 1866, Mr. Robert Hunt intimates, was so disastrously remarkable in connection with tin and copper mining, that a more than usual close examination of the condition of the mines of Devonshire and Cornwall was considered necessary. The lists of mines in the "Appendix to the Mineral Statistics" show that at the end of 1866 more than 300 mines had been suspended which had been within the few previous years in full work. This necessarily threw a large number of miners out of work, and it appears that more than 7,000 Cornish miners emigrated.

The production of tin ore in 1866 was 15,080 tons, and the mean average price for the year was £48 10s. 9d. per ton; whereas the production of 1865 was 15,686 tons, and the mean average price of the ore was £55 6s. per ton. The consequence of this is a depression from which, under favorable circumstances, it will be long before our western mining counties can recover. Some important tables, showing the progress of the Dutch tin trade since 1855 are given. From these we learn that the island of Banca produced in 1866, 158,626 slabs of tin, and that of Billiton 33,000 slabs (1,000 Banca slabs weighing from 34 to 35 tons.

COPPER.—There were 174 mines in these islands producing and selling copper in 1866. These produced, of copper ore, 180,378 tons, valued at £759,118, from which we obtained metallic copper, 11,153 tons, valued at £1,019,168. This shows a considerable falling off in the produce of copper mines. During the year there was an increase of more than 7,000 tons in the copper ore and regulus imported: of this Chili alone sent nearly 56,000 tons.

LEAD AND SILVER.—There has been but little variation in the production of these metals from our mines. In 1865 our lead mines gave us 90,452 tons of lead ore, yielding 67,181 tons of lead and 724,856 ounces of silver. In 1866 we mined 91,047 tons of lead ore, producing 67,390 tons of lead and 63,188 ounces of silver. The silver given in 1865, it is explained, is in excess of the real quantity obtained, many mines having returned the silver contained in the ore, which was not eventually separated from the smelter, since, when the lead contains less than four ounces to the ton, it does not pay for separation. The quantity given this year is the quantity actually produced, as nearly as this can be ascertained.

GOLD.—Our gold mines in North Wales produced 2,927 tons of auriferous quartz, from which 743 oz. of gold were obtained.

Of the other metals nothing need be said beyond the statement contained in the following summary of the minerals raised and the metals produced in the United Kingdom in 1866:

MINERALS.

Minerals raised.		Estimated value at place of production.
Coals	101,630,544 tons	£25,407,635
Iron ore	9,665,012 "	3,119,098
Tin	15,080 "	731,946
Copper	180,378 "	759,118
Lead	81,047 "	1,161,223
Zinc	12,770 "	42,955
Pyrites	135,402 "	77,982

METALS.

Iron	4,530,051 tons	£11,326,127
Tin	9,990 "	885,368
Copper	11,151 "	919,168
Lead	67,336 "	1,311,509
Silver	636,188 o. s.	174,951
Gold	743 "	2,656
Zinc	3,152 tons	69,916

The total value of our mineral productions for the year 1866 will be, according to Mr. Robert Hunt's return and estimate:

Metals obtained from the ores raised from the mines of the United Kingdom	£14,954,695
Coals estimated price at the place of production	25,407,635
Earthly minerals (not including building stones)	2,350,009

Tin in Missouri.

The reported discovery of numerous veins of tin ore in the county of Madison, Mo., is causing great excitement among speculators in mineral lands. If reports be true, we must regard this discovery as one of the most important events in the history of American mining. Tin has long been sought for, but thus far the few veins found have been too small to warrant their being successfully worked. Some hopes were entertained that the vein at Jackson, N. H., would be favorably developed. Very little tin has, however, been found in that locality. At a later period it was expected that tin would be found, in paying quanties, on the Pacific Coast, yet no tin is now exported from California. Our principal source of supply has been the Cornwall mines of Great Britain, which yield about 6,000 tuns of tin annually. Bolivia, South America, exports about 3,000 tuns; the Island of Banca in Asia, 4,000; the Peninsula of Malay, 1000; and Australia, 1660. On the continent of Europe, two mines are now opened in Bohemia, one in Saxony, three in France, one in Sweden, and one in Siberia. These, as well as the Spanish mines, which are as old as those of Cornwall, do not yield a surplus for exportation. Tin (called in chemical works by its Latin name, *Stannum*) is one of the seven metals used by the ancients. In the form of bronze (an alloy of copper and tin), it was known to the Egyptians, Hebrews, and Greeks, who probably bought it India. The Phenecians, at a later period, brought tin from the British Isles. Tin is a white metal of high lustre. It melts at about 150 deg F. At the temperature of boiling water it is very malleable, and may be rolled into sheets not exceeding one-thousandth of an inch in thickness. At ordinary temperatures it is not readily tarnished by oxidation, but at a high heat, it rapidly combines with the air, and burns very readily with a brilliant white light, forming, as the product of combustion, binoxide of tin. The chief value of tin consists in the power of resisting ordinary atmospheric changes, and remaining more inert than other common metals, under the action of water. For domestic purposes, tin ranks in utility next to iron. In fact, the combination of these metals, in the form of tinned iron plate or sheets, makes the material from which is manufactured the tinware found in every American kitchen. Copper vessels coated with tin are also important implements in the culinary department. Tinned iron is largely used, especially in cities for roofing. One of the most valuable applications of tin is for making water pipes. Pure tin does not bend easily, and is found less valuable for tubes than its combination with lead in the form of tin-lined lead pipe. The ordinary tinfoil now used as wrappers, in place of paper, is a union of very thin sheets of lead and tin. Tin takes part in many valuable alloys. It is a component of Britannia ware, pewter, common solder, gun metal, bell metal, and bronze. With about twice its weight of copper it forms the speculum metal employed in making reflectors for telescopes. With mercury it gives an amalgam much used in "silvering" mirrors. The chlorides of tin are of great service to the dyer and calico printer. Binoxide of tin has been used in making enamel. With regard to the extent and precise value of the tin ores of Missouri we have as yet but little reliable information. Several mineralogists of acknowledged ability are now making explorations, from whom we may soon expect more precise statements. The percentage of tin is not probably large if we may judge from the yield of a single specimen, but the quanity of the ore and the ease of working it may make up for its leanness. The importance of this metal may be appreciated by the statement that the United States imported from Great Britain, last year, $7,000,000 worth of tin and tin compounds; about $6,000,000 of which represented the value of tinned iron plate sent to our markets.—*Exchange.*

Patent Claims.

Interesting to Miners, Millmen, Metallurgists, Oil-Men, and Others.

The following claims have recently been issued from the United States Patent Office:

67,839.—MANUFACTURE OF WHITE PAINT FROM ZINC ORES.—Nathan Nathan Bartlett, Birmingham, and George T. Lewis, Philadelphia, Pa.

We claim the employment of steam, in combination with water, in the manufacture of white paint from zinc ores, the water being so arranged that the products of combustion arising from the furnace shall be caused to pass through or come in intimate contact with the water on their way from the furnace to the bags or settling chamber, and the steam being caused to mix with such products before they pass through or come into such contact with the water, substantially as set forth.

67,842—AMALGAMATING PRECIOUS METALS.—John B. Beers, San Francisco, Cal.

I claim the use of the amalgamated woven wire gauze or amalgamated perforated sheet metal.

I also claim, in combination with amalgamated wire gauze or perforated sheet metal, the canvass or cloth arranged under the wire gauze or perforated metal.

I also claim, in combination with the amalgamated wire gauze or perforated metal, the use of corrugated amalgamated sheet metal plated either with or without the canvass and cloth.

I also claim, in connection with the amalgamated plates, the use of iron wire gauze or screens, arranged on or above the plates, substantially as described for the purpose set forth.

67,857—MODE OF FORMING A STEEL SURFACE SHEET AND BAR IRON.—Josiah W. Ells, Pittsburgh, Pa.

I claim the herein described method of forming a cast steel surface on bars or sheets of wrought iron.

67,862.—ORE-ROASTING FURNACE.—George B. Field, New York city.

1st, I claim the tube, G, in connection with the agitating apparatus, substantially as and for the purpose described.

2d. The eduction pipe, H, having its extremity bent upward, substantially as and for the purpose specified.

3d. The introduction of water or steam inside of hollow shelves, rakes, or agitators for the stirring or manipulating of ores in ore-roasting furnaces, substantially as and for the purpose specified.

4th, The introduction of steam generators in the inside of roasting furnaces for the purpose specified.

67,875.—MINERS' PICK.—H. M. Hamilton, New York City, Antedated August 1, 1867.

I claim a pick or mattock, constructed with an eye open at each end, and whose sides are partly parallel and partly flaring, and adapted to the introduction of a handle whose sides are of counterpart form, and whose flaring sides are adapted to wedge in said eye, substantially as described and represented.

67,963.—SLATE CUTTER.—T. R. Drummond, Hartford, Connecticut.

1st, I claim the four sided box knife, F, the elastic block, G, and the cushion within the cutters on the block, D, arranged and operating substantially as described and for the purpose set forth.

2d, In combination with the cutter box knife, F, I claim the springs, a, a, or their equivalents and also the use of springs under the cussion of the block, D, substantially as and for the purposes set forth.

67,988.—PETROLEUM STILL.—E. G. Kelley, New York City.

1st, I claim providing a still for petroleum or other hydro-carbon liquids, with two pipes, F and I, for carrying off and separating the products of distillation, substantially as set forth

2d. The cylindrical boiler, B, in combination with the inclined vessel, C, in which are inclined diaphrams, D, or their equivalents, substantially as and for the purpose herein shown and described.

3d, The above, in combination with the inclined pipe, F, when the same is arranged and set forth, and with the pipe, I, all made and operating substantially as and for the purpose herein shown and described.

Special Scientific Brevities.

☞ F. Moigno writes to the London *Chemical News* that the process for the cheap production of oxygen by M. Tessie de Motay, has perfectly succeeded in the laboratory of the Exhibition established on the banks of the Seine. The new method, so simple and efficacious, has fulfilled all expectations. Fifty kilogs. of manganate of soda give 400 to 450 litres of oxygen per hour, after eighty successive re-oxidations. M. Tessie de Motay has so perfected the fabrication of manganate of soda, that he is almost certain of being able to furnish it to the trade at the price of 30 or 40 centimes the kilogramme. The necessary arrangements for assaying on a large scale the oxyhydrogen light at the Hotel de Ville, in the square as well as in the interior, advance rapidly, and the generators are fitted up already in the cellars. Oxygen and common gas burned together in common burners increase the illuminating power from 1 to 8 or even 15, or can serve at the same time for burning in the chloride of magnesium lamps of M. Carlevaris, which do excellent service.

☞ Prof. J. C. Watson, of Ann Arbor, Michigan, announces the discovery of a planet hitherto unknown, which was first seen by him a few evenings ago. It is in the constellation of Cetus, which lies about 60 degrees west of Mera Ceti, the wonderful variable star; it is also 38 degrees SW. of the Peliades, and rises about 11 P.M., being invisible through any but telescopes of superior power. It is situated according to astronomical phraseology, in the right ascension, 1 degree and 40 minutes, and in declination, 3 degrees and 10 minutes south, and is at present moving west and south.

☞ Asbury University, at Greencastle, Ind., has opened its doors to women on the same terms as to young men. They can enter the College classes and take the regular four years' course. The *Western Christian Advocate* says: "We heartily concur in all parts of this arrangement. Mind has no sex; why should not equal opportunities be given to all mankind? woman may have peculiar sphere, but if the college is the place for culture, for education, she needs and deserves as much of it as man."

☞ M. Zaliwski-Mikorski has invented a new syphon, which he thinks likely to prove useful in the chemical laboratory. In using the ordinary syphon, it sometimes happens that noxious and even poisonous fluids pass into the mouth. The new syphon is not "set in work" by suction. One of its legs is provided with a small accessory tube, and by blowing through this latter the fluid moves along the syphon.

☞ Professor Malech says that a direct antidote to the poisonous effects of the inhalation of chlorine is sulphuretted hydrogen, the halogen combining instantly with the hydrogen, liberating sulphur. The professor has tried it himself after accidentally inhaling chlorine, and obtained immediate relief. The same remedy would doubtless be effectual in cases of bromine poisoning.—*Chemical News.*

Professor Abel places the exploding point of gun cotton at about 150 deg. C., which is equivalent to 302 F.

All Sorts.

☞ The surveying party which left Ottawa, Canada, sometime in March last, under direction of the government to ascertain the length of the Ottawa river, and to locate its head waters, have returned. They report the length of the river to be about 1,000 miles, instead of 500, as supposed. They found, while ascertaining the course of the river, Lake Gros, said to be 400 miles in circumference. They were met by a tribe of Indians, who at first refused to allow them to proceed, but, after explanations, they held a council of war, and the surveying party were allowed to pursue their journey. The navigation from Lake Temiscawing to Lake Gros is impeded by numerous rapids. They encountered much ice on the 24th of May, on Lake Gros. The natives are Pagans, and two men have a plurality of wives.

☞ "How dismal you look!" said a bucket to his companion, as they were going to the well. "Ah!" replied the other, "I was reflecting on the uselessness of our being filled; for, let us go away ever so full, we always come back empty." "Dear me! how strange to look at it in that way," said the first bucket. "Now, I enjoy the thought that, however empty we come, we always go away full. Only look at it in that light, and you'll be as cheerful as I am."

☞ Another bridge is to thrown over the Niagara River, below the falls, for the accommodation of foot passengers only. It will require a span of 1,260 feet. The width will be ten feet, and the height, above water, one hundred feet. The structure will be of the usual wire cables, resting upon woo en towers.

☞ The Buffalo *Express* gives some very interesting statistics of the frog trade in that vicinity. It says a man or boy can earn a thousand dollars in the season by catching frogs and preparing them for the market. In Chicago, the business of raising frogs for market is assuming large proportions.

☞ A little boy who was asking his mother how many Gods there were, was instantly answered by his younger brother: "Why, one to be sure." "But how do you know that?" inquired the other. "Because," he replied, "God fills every place, and there is no room for any other."

☞ The great tunnel of the Central Pacific Railroad at the summit of the Sierra Nevada Mountains is completed. The rails are being laid on the easterly slope, where twenty miles of the track are graded. It is expected that the locomotive will, in a few days, pass through the tunnel, and that the line will be completed to the Nevada line in September next.

☞ An explosive matter is obtained by treating a common glue with a strong solution of chlorate and nitrate of potash. This material, it is said, burns like ordinary gunpowder.

☞ A co-operative iron rolling mill, which started at Alliance, Ohio, a year ago, with $100,000 capital, has since doubled it. One hundred and fifty men are employed.

☞ Quilp thinks it rather remarkable that while several thousand feet are required to make one rood, a single foot, properly applied, is often sufficient to make one civil.

Special Notices.

Successful Manufacturers.

We believe it may be safely asserted, that more enterprises fall short of success from lack of experience on the part of those who undertake them, than from any other cause. Money and energy alone cannot guarantee success; but united to experience they undoubtedly hasten it. Of the three, experience is the absolute necessity, and any enterprise that is started without it, is quite certain to lead its votaries to bankruptcy. We may conclude, then, when we see a prosperous manufactory established, that there are those at the head of it who are experienced in the business. We recently visited the machine shops of Messrs. STEPHEN J. GEOGHEGAN & Co., 199 and 201 Centre street, in this city, and were pleased to find there prosperity eminently worthy to be quoted as an example under the head of successful manufacturers. We would therefore call the attention of mining and other engineers, and superintendents to them, as being able to supply them advantageously with many articles they may need. Although the present co-partnership is of late date, those that compose the firm are not by any means new in the business; for Mr. GEOHEGAN has followed his present calling (recently with Mr. A. S. Cameron, under the style of Cameron & Geohegan), for nearly twenty years. Among other articles manufactured, we noticed wrought and cast iron steam pipes, valves, cocks, stops, dies, tongs, etc.; coils for breweries, distilleries, soap factories, etc.; and special mention may be made of Storer's patent lubricators for supplying lubricating matter in bulk to the cylinders of marine and stationary engines, steam pumps, etc., which are well known and extensively in use. Messrs. G. & Co. are also agents for the sale of many of the best steam pumps, descriptive circulars of which will be mailed to any part of the country upon application.

THE EUREKA BRICK MACHINE

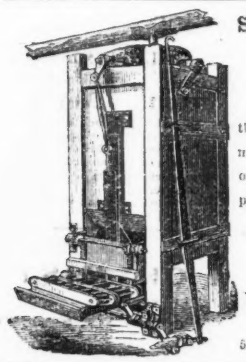
IS ADMITTED BY EVERY BRICKMAKER WHO HAS SEEN IT TO BE THE simplest, most powerful, and every way the most desirable Clay Tempering machine in America. With only

ONE PAIR OF HORSES AND NINE HANDS,

it will make 3,000 GOOD BRICKS PER HOUR;
and with steam power, 4,320 PER HOUR.

It has no complex machinery to be continually getting out of order and breaking down, and does not require skilled laborers to run it. We have also a Re-dressing Brick Machine for making Philadelphia front bricks, and one man and one boy can re-press 4,000 per day. We have also the best Hay Fork in the world. The Empire Shingle machine is the best Shingle machine in use.

ABRAM REQUA, General Agent for United States.
23:2:qp 141 Broadway, N. Y.



STAR BRICK MACHINE

The best, strongest and cheapest in the United States. We warrant it to make more and better Bricks than any other Machine now in use. It takes less power and help to run it.

Manufactured and sold by

JAMES MARTIN,

Corner North Third and Grove streets,
Jersey City, N. J
5:4:qp

GREAT PRIZE KILN.

HOFFMAN'S PATENT CIRCULAR BRICK KILN,

With perpetual operation, received, as it did at the International Exhibition in London, 1862, also at the late Exposition in Paris, one of the great Prizes. Only sixty-four in all of these Prizes were distributed, and the Inventor had the honor of receiving said Prize from the hands of the Emperor Napoleon.

In this Kiln is going on at the same time and without interruption, the BURNING READY, the GRADUAL COOLING, the GRADUAL HEATING, the SETTING of fresh and the TAKING OUT of burned and sufficiently cooled bricks, lime, cement, etc., and the FIRES ARE SUPPLIED WITH RED-HOT ATMOSPHERIC AIR to support the combustion.

By the use of this Kiln two-thirds of the fuel is saved, the bricks are burnt better and much more uniform, labor is saved in working it, and any kind of fuel, as wood, coal, peat, small coal, etc., may be used. For particulars apply to 8:4:tx G. L. DETHLEFS, 216 East Broadway.

COAL.

PACKER, HEALY & CO.,

SUCCESSORS TO DANIEL PACKER AND CO.,
MINERS AND SHIPPERS OF
ANTHRACITE AND BITUMINOUS COAL,
20 Nassau Street, corner Pine Street, New York. Philadelphia, 203 Walnut Street. BOSTON, 29 Kilby Street. 3:2:qp:q

ENGLISH COAL AND CANNEL.

DESPARD COAL, from Baltimore,
PROVINCIAL COAL,
ANTHRACITE COAL,
For Sale in Lots to suit.

PARMELE BROS.,
AGENCY OF GEORGE WRIGHT & CO., LIVERPOOL,
Office, No. 32 PINE STREET, NEW YORK.
31:qp:q Yard, West 22d Street, near 10th Avenue.

WILKESBARRE COAL,

DELIVERED DIRECT FROM THE MINES OF THE
Wilkesbarre Coal and Iron Company,
OR FOR RESHIPMENT AT
Elizabethport and Jersey City
OFFICE—No. 16 WALL STREET, NEW YORK.
8:3 xm

HECKSCHER, BOWNS & CO.,

NO. 111 BROADWAY,
ROOM 79 (TRINITY BUILDING), NEW YORK.
Offer for sale the following Coals at the lowest market rates:
GLENDON COAL COMPANY'S
BUCK RIDGE, SHAMOKIN,
BLACK DIAMOND VEIN, RED ASH,
LOCUST MOUNTAIN, WHITE ASH.
Agents for the celebrated "Hartford Co. Coal." vol2 5:qp

JOHN WHITE & CO., SHIPPERS OF

McNeal, Wilkesbarre and Lehigh Coal,
FOR STEAM AND FAMILY USE
OFFICE,
Room No. 75, 111 Broadway, (Trinity Building, Broadway, N. Y.
JNO. WHITE. 3:1:qp:q LOUIS T. SNOW.

A. T. STOUT & CO.,

MINERS AND SHIPPERS OF
"FULTON" AND "STOUT" LEHIGH COALS,
FULTON LUMP,
(Especially adapted for smelting Iron.)
ROOMS, 44 & 46 TRINITY BUILDING, NEW YORK.
A. T. STOUT. S. VAN WICKLE. G. LEE STOUT.
1:3:50

REPPLIER, FREEMAN & CO.,

MINERS AND SHIPPERS OF
REPPLIER'S LOCUST MOUNTAIN, DUNCAN RED ASH,
AND
CUMBERLAND COALS.
WHARF, NORTH EIGHTH STREET, WILLIAMSBURG.
Office, - - - - - - 111 Broadway, New York.
1:3:qp

HONEY BROOK COAL COMPANY,

Exclusive Miners and Shippers of the Celebrated
HONEY BROOK LEHIGH COAL,
NO. 113 BROADWAY, NEW YORK.
JAS. H. LYLES, Agent.
Wharves, Port Johnston, N. J. Philadelphia Office, 209 Walnut street.
3:6:qp q **J. B. McCREARY, President.**

C. E. DETMOLD,

MINER AND SHIPPER OF
SPRING MOUNTAIN AND HONEY BROOK LEHIGH COALS.
ALSO,
GEORGE'S CREEK COALS.
ROOMS 40 & 42 TRINITY BUILDING, 111 BROADWAY, N. Y. 1:3:xm

ASHBURTON COAL CO.,

MINERS AND SHIPPERS OF
LEHIGH COAL,
Delivered direct from the mines or for reshipment at Port Johnston.
LOUIS J. BELLONI, Jr., Pres't.
2:4:qp OFFICE, No. 41 PINE STREET, NEW YORK.

MILES R. MARTIN,

SUCCESSOR TO
HOWELL, MARTIN & CO.,
Wholesale Dealer in
LEHIGH, LOCUST MOUNTAIN, SHAMOKIN, RED ASH, LORBERRY, AND SCRANTON COALS.
1:3:qp:q **Room 21 Trinity Building, 111 Broadway, New York**

RANDOLPH BROTHERS,

SOLE AGENTS OF THE ORIGINAL
SPRING MOUNTAIN LEHIGH COAL,
Extensively Used for Smelting Iron
ROOMS, 28 AND 30 TRINITY BUILDING, NEW YORK. 3:2:qp:q

DAY, HUDDELL & CO.,

MINERS AND SHIPPERS OF
HARLEIGH LEHIGH COAL,
And the Celebrated
HICKORY, BROAD MOUNTAIN, EXCELSIOR, SHAMOKIN AND NEW ENGLAND RED ASH.
OFFICES:
Room 51, TRINITY BUILDING, 111 Broadway.
Philadelphia, 109 WALNUT STREET. **Boston,** 7 LOANE STREET.
3:4:px

CRANE & FASSITT,

SHIPPERS AND DEALERS
IN
ANTHRACITE AND BITUMINOUS COAL,
NEWBURGH—ORRELL AND OTHER SUPERIOR GAS COALS.
OFFICES:
NEW YORK, 113 BROADWAY. BOSTON, 1 CENTRAL WHARF.
PHILADELPHIA: 216 WALNUT STREET. PROVIDENCE, R. I.: 10 SOUTH WATER STREET.
3:4:qp:q

LEWIS AUDENRIED & CO.,

Miners and Shippers of
CELEBRATED ANTHRACITE COALS,
Diamond Vein and Locust Mountain
FROM PHILADELPHIA AND THE MINES, ELIZABETHPORT AND JERSEY CITY.
Also, superior CUMBERLAND COALS.
205 Walnut street, PHILA. 14 Kilby street, BOSTON.
20 Westminster street, PROV. 24 Second street, BALTIMORE.
27:tf 110 BROADWAY, NEW YORK.

SAMUEL BONNELL, JR.,

OFFERS FOR SALE
SUGAR CREEK
LEHIGH COAL,
Delivered on board vessels at Pier No. 4, Elizabethport, N. J.
Office, 43 & 45 Trinity Building, 111 Broadway N. Y. 1:3:qp:q

CALDWELL, GORDON & CO.,

WHOLESALE DEALERS IN
ANTHRACITE AND BITUMINOUS COAL,
HENRY HEIL'S
CELEBRATED EAST FRANKLIN COAL,
Room 35 Trinity Building,
NO. 111 BROADWAY, NEW YORK.
S. CALDWELL, JR. F. A. HALL, N. P. GORDON, S. B. YOUNG.
BOSTON, Office 144 State St. PHILADELPHIA, 112 Walnut St.
3:2:qp:q

53D AUCTION SALE.

75,000 TONS
SCRANTON COAL,
ON WEDNESDAY, AUGUST 28TH, 1867.
NEW YORK, August 17, 1867.

The DELAWARE, LACKAWANNA AND WESTERN RAILROAD COMPANY will sell, by Messrs. JOHN H. DRAPER & CO., Auctioneers, at the Company's salesroom, No. 26 EXCHANGE PLACE, corner of William street, New York, on Wednesday, August 28th, inst., at 12 o'clock, noon,

75,000 TONS
OF
FRESH MINED COAL, FROM THE LACKAWANNA REGIONS,

of the usual sizes, deliverable at their Depot, Elizabethport, N. J. during the month of September, 1867.

Also, at the same time and place,

10,000 TONS,

deliverable at Washington, New Jersey.

TERMS: Fifty cents per ton, payable in current funds on the day of sale, and the balance within ten days thereafter, if required, at the office of the Company. 8:4:it JOHN BRISBIN, President.

AN INVENTION OF RARE MERIT!

BROWN'S PATENT
METAL TOP LAMP CHIMNEY,
THAT WILL NOT BREAK BY HEAT,

Burns up all gas and smoke, never breaks by putting on a shade; short, and not top-heavy; is easily cleaned by removing top; in fact, the most perfect chimney known, and is fast superseding all others where it has been introduced.

No dealer can afford to be without it.

NEW LAMP CHIMNEY CO,
245 Pearl Street, New York.

FOR SALE.

A PARTLY DEVELOPED SLATE QUARRY FOR sale or lease in Georgia. Within twenty miles of Rome, Georgia, there is a magnificent SLATE QUARRY, partly developed, standing two hundred feet above the ground, comprising forty Acres, just taking in the highest point of the Mountain, which is positively a solid mass of inexhaustible Slate of the finest kind. This property is now being worked in a small way by five or six Workmen, who made for the proprietors last year over $5,000. Slate from this Quarry is now laid down in Louisville, Ky., for about $8 60 per square, where it is worth $15. It is now being sold at the Quarry for $12.

The Quarry is situated on a creek capable of being made serviceable for Mills or Factories for manufacturing the Slate into Billiard Beds, Mantels etc., etc., for which there is a ready market. Title perfect.

These particulars may be relied on as being strictly true. Further information, terms, etc., may be obtained by addressing B. F. J., care office JOURNAL OF MINING, 27 Park Row, New York, where a photograph of the property may be seen. 7:3:tf

VALUABLE SLATE PROPERTY FOR SALE.

In pursuance of an order of the Court of Common Pleas of Lehigh County, Pa., under proceedings in partition, the undersigned will sell on Wednesday, the 21st day of August, inst., at 10 o'clock, A. M., at the American Hotel in Allentown, certain Real Estate known as THE LYNNPORT SLATE QUARRIES, consisting of about twenty-nine Acres of Land, in which there are in full working order two of the most valuable Slate Quarries in Pennsylvania, with a large and well arranged manufactory for the preparation of the beautiful enamelled Slate Mantels, Table and Bureau Tops, Billiard Beds, School and Roofing Slate. There is a dwelling house and other valuable buildings on the premises. The land is well timbered, and part of it in a high state of cultivation. The property is but a short distance from the post road, which is in constant communication with New York and Philadelphia. This is a very valuable property, and highly worthy the attention of capitalists.

ALLENTOWN, PA., August 1, 1867. 6:2t JACOB BOLBEN.

FOR SALE—VALUABLE PEAT LAND, THREE AND A HALF MILES FROM NEW YORK CITY.—The advertiser has for sale Fourteen Acres of Good Peat Land, three and a-half miles from New York City, situated near Middle Village, Long Island. A railroad, now in course of construction, has cut off one corner of this property—offering great facilities for transportation.

The Peat has been found to extend to a depth of thirty feet, and of excellent quality. It will be sold at a low figure. Address,

ROLT. E. HULL,
58 Vesey street, N. Y City.
Call between 8 and 10 A.M., and 3 and 5 P.M. 10:3:qs

SLATE.

JOHN GALT,

WHOLESALE DEALER IN ROOFING SLATE.
SOLE AGENT FOR THE
EAGLE SLATE COMPANY OF VERMONT,
Who produce Purple, Green and Red ROOFING SLATE. Sole Agent for New York and the West for the
CHAPMAN SLATE COMPANY OF PENNSYLVANIA,
Who produce a Superior Black or Dark Blue Slate; also Sole Agent for New York and the West for the
LEHIGH SLATE COMPANY OF PENNSYLVANIA.
GENERAL DEPOT,
Cor. Tenth Avenue and Twelfth Street, N. Y City.
Established in 1850.

BRANCH DEPOTS:

Buffalo: Jas. W. Chatman, Terrace Square.
Chicago: James Parker, corner Franklin and Washington Streets.
Charleston: S. C.: C. J. Demorest, East Bay, near Wentworth Street.
New Orleans: J. J. Lee, 368 Magazine Street.

☞ I am prepared to give parties the prices of Slate delivered throughout the United States at the nearest Railroad Station.

Orders by mail will receive prompt attention. 17:2 xm.

ATTENTION, TINNERS, SLATERS, QUARRYMEN ARCHITECTS AND DEALERS.

STAFFORD'S SLATE TABLES,
With Practical Instructions to those unacquainted with
SLATE ROOFING,
Exhibiting over Thirty Sizes Roofing Slates; showing the Surface, in Squares and Feet, covered by any given number of Slate, from one to twenty thousand. Likewise, Several Tables showing the Number of Squares and Feet in any given quantity of Tin Plate. Also, Several Useful Tables to Builders, Slaters and others.

JUST PUBLISHED BY
COOK, OVERFIELD & SNEDEKER,
35 Dey st., New York, and 405 Commerce st., Philadelphia.
PRICE THREE DOLLARS. Sent by mail, postage pre-paid, on receipt of $3.
8:3:qp

TEN PER CENT.

FIRST MORTGAGE BONDS.
INTEREST PAYABLE IN GOLD.

THE HAMILTON
GOLD AND SILVER MINING COMPANY,
OF NEVADA.

This Company, based on a large and valuable Property in the
MAMMOTH AND NORTH UNION DISTRICTS,
NYE COUNTY, STATE OF NEVADA
Offer Bonds having Five Years to run, bearing interest at the rate of
TEN PER CENT. PER ANNUM,
Payable half yearly in Gold, at the Office of the Company,
NO. 430 WALNUT STREET, PHILADELPHIA,
Or at the Office of
THOMAS BARCLAY,
No. 4 WALL STREET, NEW YORK

These Securities form a first claim on the entire assets of the Company. They are exchangeable for ordinary Stock of the Company at the option of the holder, at any period during the five years. For particulars and other information apply to

JACOB ZEIGLER,
Secretary and Treasurer, at the Office of the Company, or to THOMAS BARCLAY, No. 4 WALL STREET, New York.

September Coupons for 1867 will be paid by either of the parties above named. 8:4:tf

GREGORY YALE,

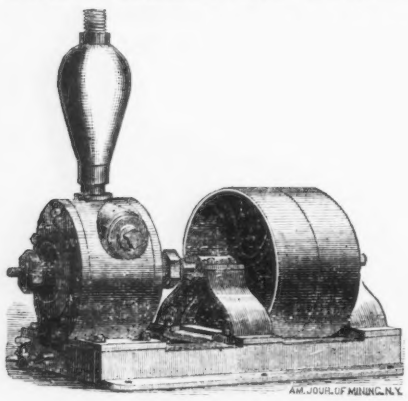
ATTORNEY & COUNSELLOR AT LAW,
18 Merchants' Exchange,
SAN FRANCISCO, CAL.

Has been practicing Law in California since 1849. He will give special attention to applications for United States Patents for Mining Lodes, under the act of Congress of the 26th of July, 1866 before the local officers of the respective Land Districts in the state, and is prepared to give opinions upon all legal questions relating to the Mining Laws of the State, and upon the Mining Ordinances of Mexico and Spain.

He refers to the Hon. Stephen J. Field, Associate Justice of the Supreme Court of the United States.

Jan. 1, 1867. 13:12:qp

ROTARY ENGINE AND PUMP Co.



METROPOTITAN PATENT

The best and most effective Steam and Belt Pump adapted for general use. Warranted to form a vacuum of 28 inches. Mine owners should call and examine it as a MINING PUMP.
Offices of the Company, No. 181 PEARL STREET, Room 10, and No. 14 Second Avenue. ☞ Send for Circular. 12:3qp

TEAM PUMPS.

A. S. CAMERON & CO.,

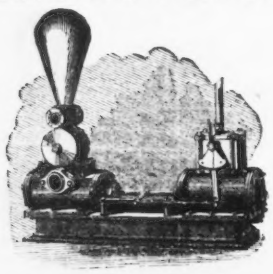
22ND STREET, CORNER OF 2ND AVENUE, N. Y.

Have one hundred and forty patterns to select from, arranged to order for pumping WATER, AIR, OIL, ACID, LIQUOR, SYRUP, MASH, &c.

Pumps guaranteed in the most difficult situations. We refer to any first class machine shop in the United States.

Parties are hereby cautioned against using Steam Pumps arranged to work by hand in violation of our original and re-issued Letter Patent, covering this eature. 22-1-qp

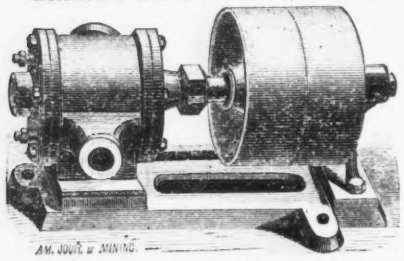
NIAGARA STEAM PUMP WORKS.



CAMPBELL & HARDICK, BROTHERS,
No. 9 ADAMS STREET, BROOKLYN, N. Y.
Send for circular. 6-4-xm

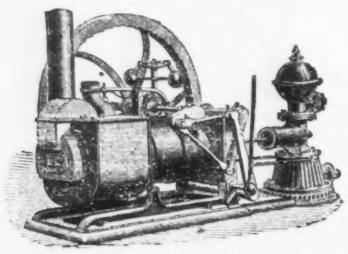
EXCELSIOR ROTARY PUMP AND BLOWER,

USED IN
"AGITATING" AND PUMPING OIL, WATER, &c.



W. & R. FOSTER,
14.2.qp **No. 5 Adams street, Brooklyn.**

PUMPING ENGINES.



ERICSSON CALORIC PUMPS.

164 Duane Street, New York.

Ten years of practical working in Mines, at Railroad Stations, Quarries, in private and public buildings, for irrigating, &c., have proved their Economy, Durability and Efficiency to be unequalled.
☞ Orders promptly filled.

JAMES A. ROBINSON,
24.2.xm 164 DUANE STREET, NEW YORK.

THE STEAM SYPHON PUMP,

is the most SIMPLE, EFFECTIVE and DURABLE device for raising water by steam yet discovered. It is an

Independent Lift and Force Pump,

and throws a steady, continuous stream, without piston, plunger, valves, or movable parts of any kind.

It is an efficient FIRE ENGINE wherever a steam boiler is used, and valuable for MINING purposes where the height is not too great to which water must be forced. Address

STEAM SYPHON COMPANY,
vol2-xm 48 Dey Street, New York.

DUNCAN, SHERMAN & CO.,

BANKERS,

CORNER PINE AND NASSAU STREETS, N. Y.

ISSUE CIRCULAR NOTES AND LETTERS OF CREDIT FOR TRAVELLERS, AVAILABLE IN ALL THE PRINCIPAL CITIES OF THE WORLD.

MERCANTILE CREDITS

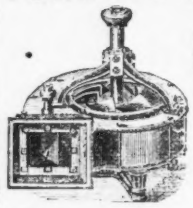
For Use in Europe, China, etc. Also Make

Transfers of Money to California & Oregon, by Telegraph.

6 4.ps INTEREST ALLOWED ON DEPOSITS.

MILLING.

TURBINE WATER WHEELS.



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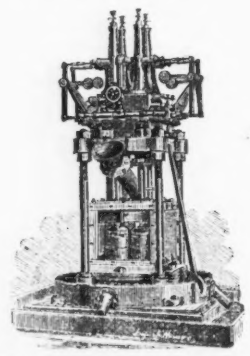

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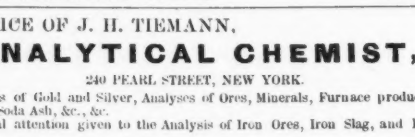

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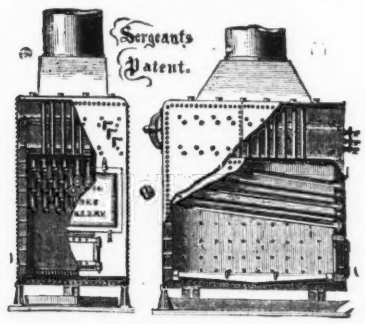

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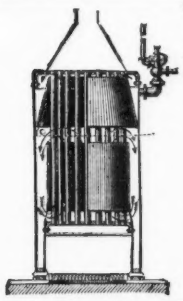

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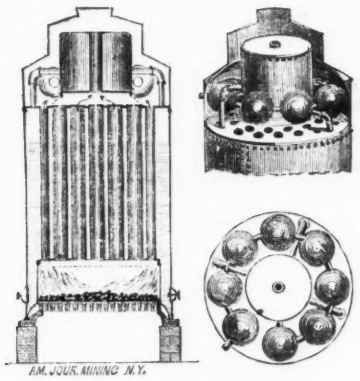

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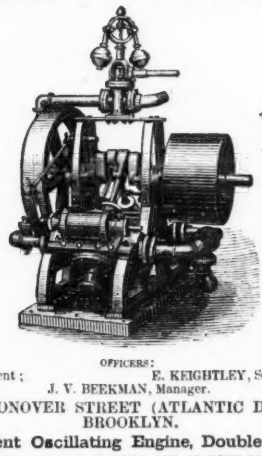

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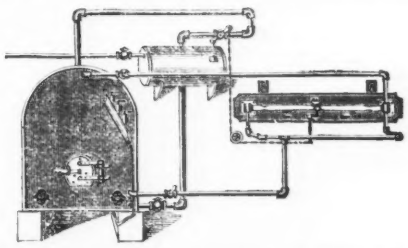

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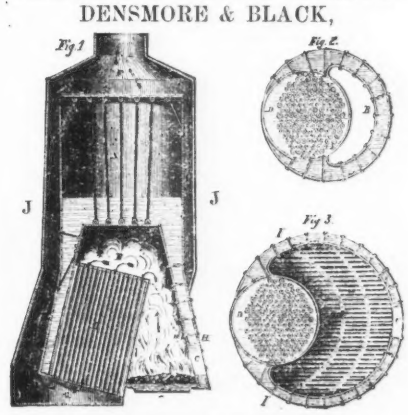

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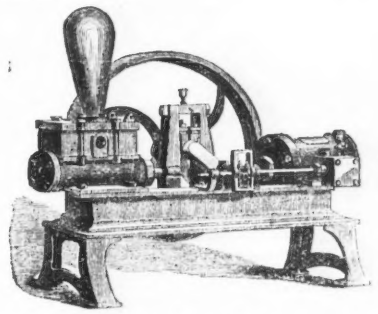

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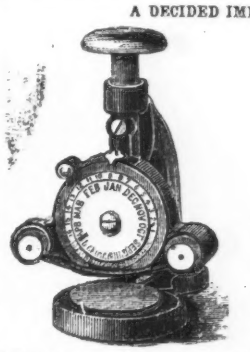

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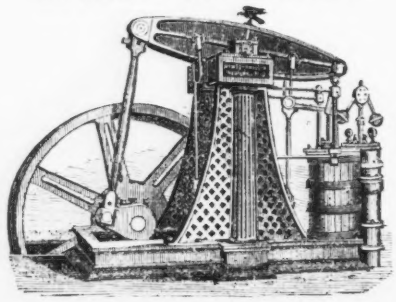

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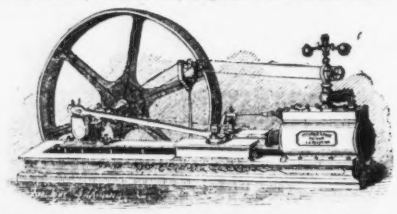

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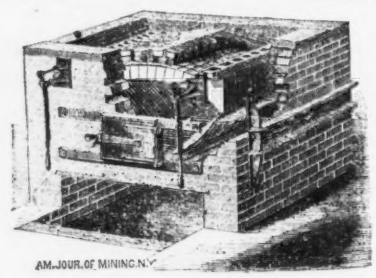

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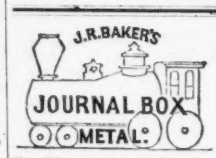

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